AMERICAN JOURNAL

OF

OPHTHALMOLOGY

SERIES 3 VOLUME 12
1929

EDITORIAL STAFF

WILLIAM H. CRISP, Editor
EDWARD JACKSON, Consulting Editor

CLARENCE LOEB
LAWRENCE T. POST
HANS BARKAN
EDWARD C. ELLETT
HARRY S. GRADLE
M. URIBE TRONCOSO
JOHN M. WHEELER

PROPERTY OF
EYE & EAR SECTION
L. A. Co Med. Assn.

COLLABORATORS

DAVID ALPERIN, *Brooklyn;* M. BEIGELMAN, *Los Angeles;* MELVILLE BLACK, *Denver;* EUGENE BLAKE, *New Haven, Connecticut;* FREDERICK C. CORDES, *San Francisco;* F. M. CRAGE, *Chicago;* BEULAH CUSHMAN, *Chicago;* RAY K. DAILY, *Houston;* RALPH W. DANIELSON, *Denver;* M. DAVIDSON, *New York;* M. L. FOLK, *Chicago;* SANFORD R. GIFFORD, *Omaha;* F. H. HAESSLER, *Milwaukee;* D. F. HARBRIDGE, *Phoenix, Arizona;* HARVEY D. LAMB, *Saint Louis;* E. G. LEAR, *New York;* PARK LEWIS, *Buffalo;* M. LOMBARDO, *Brooklyn;* DONALD H. O'ROURKE, *Denver;* M. HAYWARD POST, *Saint Louis;* SOLON L. RHODE, *Reading, Pennsylvania;* GEORGE H. STINE, *Colorado Springs;* J. B. THOMAS, *Palo Alto, California;* PHILLIPS THYGESON, *Denver;* D. L. TILDERQUIST, *Duluth, Minnesota;* M. F. WEYMANN, *Los Angeles;* A. G. WILDE, *Jackson, Mississippi;* CHARLES ZIMMERMANN, *Milwaukee.*

PUBLISHED BY THE OPHTHALMIC PUBLISHING COMPANY
7 West Madison Street, Chicago, Illinois

24227

LIBRARY OF THE
LOS ANGELES COUNTY MEDICAL ASSOCIATION
634 SOUTH WESTLAKE AVE.

AMERICAN JOURNAL OF OPHTHALMOLOGY

Volume 12 January, 1929 Number 1

DIAGNOSIS AND TREATMENT OF DACRYOCYSTITIS

LOUIS DAILY, M.D., F.A.C.S. AND RAY K. DAILY, M.D. F.A.C.S.
HOUSTON, TEXAS

Diseases of the lacrimal sac belong to the sphere of the ophthalmologist, who should manage the case, make the diagnosis, decide on the treatment, and accept the assistance of the rhinologist only for the performance of operative technique. Roentgenography of the lacrimal passages, after injection of substances opaque to the x-ray, is painless, and furnishes valuable diagnostic information as to the seat of obstruction if any. The authors have obtained very satisfactory results from the Halle-West operation, the technique of which is carefully discussed in relation to the anatomy of the parts involved. Read at the Colorado Congress of Ophthalmology and Otolaryngology, July 20 and 21, 1928.

It is unfortunately true that most ophthalmologists do not adequately understand the underlying principles or indications of intranasal surgery of the lacrimal sac, or the nature of the results to be expected from such surgery. It is even more correct to say that rhinologists are unfamiliar with the pathology and prognosis of lesions of the lacrimal sac.

The consequence of this state of affairs is that the majority of ophthalmologists do not give intranasal surgery the serious consideration which it deserves, and that some rhinologists would like to operate on every case of epiphora or dacryocystitis.

This paper is presented in the belief that diseases of the lacrimal sac belong to the sphere of ophthalmology. Such an idea is prevalent among the laity, who consult first an ophthalmologist with regard to any lacrimal disorder. The ophthalmologist should therefore manage the case, make the diagnosis, decide on the treatment, and accept the assistance of the rhinologist only for the performance of operative technique, just as he would employ a specialized technician or laboratory. The patient should return to the ophthalmologist for subsequent observation, so that the results of intranasal surgery may be reported chiefly by ophthalmologists, and not, as has usually been done, by the rhinologist.

It seems, therefore, appropriate to offer in this paper a concise but somewhat comprehensive statement of certain principles of diagnosis of lacrimal disease, together with a statement of technique of the intranasal operation in the form which we have found most satisfactory.

Diagnosis

Of the diagnostic procedures at our command for determining the condition of the lacrimal passages, the simplest is that of placing a pledget of cotton under the inferior turbinate, and instilling a drop of fluorescin at the inner canthus. If the sac is pervious the cotton in the nose will rapidly show the fluorescin stain.

Irrigation with a nonirritating collyrium is probably the method most universally employed to demonstrate the patency of the lacrimal passages. The passage of the fluid into the nose does not eliminate the presence of a beginning stenosis; and failure of the fluid to pass into the nose, while indicating a stenosis, does not localize its seat.

The location of a stenosis can be determined by probing; but even after preliminary cocainization and instillation of oil this is an intensely disagreeable procedure to the patient and not altogether safe. Inasmuch as some pressure is inevitable in the introduction of a probe, there is always danger of false passages and their subsequent infection. Where the course of the lacrimal canal is tortuous or irregular, probing may produce traumatism and bleeding of the mucous membrane. In healing, these abrasions result in adhesions, and a swelling of the mucous membrane may thus be converted into a cicatricial stricture.

Roentgenography of the lacrimal passages is a procedure painless to the patient, and yielding accurate and definite information. It localizes stenoses and fistulas, outlines the varying caliber and direction of the lacrimal sac and duct, and may sometimes reveal regeneration of an extirpated lacrimal sac.

The radio-opaque substances used to visualize the lacrimal passages have been numerous, and their choice is of little consequence. They should be nonirritating, and of a consistency to permit of easy injection. Ewing, who in 1909 was the first to apply this method, used a bismuth albolene paste; Aubaret used a lead or bismuth paraffin mixture; von Czily thorium and cerium oxide paraffin paste; von Gangelen barium sulphate; van der Hoeve, Bollock, Dariaux, Delaplage, Dreuschuch, and Asbury use lipiodol; Michäscu and Stedefeld prefer iodipin.

Prior to the introduction of lipiodol, we used a bismuth and albolene paste: since Sicard and Forestier began using lipiodol for pneumography, we have used it for outlining the lacrimal passages. The lipiodol is always ready for use, is more fluid and somewhat easier of injection than bismuth. Because of this greater fluidity it runs out of the sac very quickly, and the injection has to be made on the x-ray table, so that the pictures may be taken before the lipiodol passes into the nose.

Where the x-ray laboratory is not near at hand, the bismuth paste is more satisfactory; its heavier consistency holds it longer within the sac; the injection can be made in the office, and the patient sent to the x-ray laboratory. The bismuth paste is prepared by mixing bismuth subnitrate powder with liquid albolene until its consistency permits it to hold a string-like shape, after it is pushed through the Luer syringe.

The technique of the injection is very simple. A drop of cocaine is instilled over the lacrimal punctum. The punctum is dilated with a conical dilator, and the sac irrigated to remove secretion. The presence of secretion prevents the opaque substance from filling the sac, which is necessary for obtaining a good outline. To fill even a dilated sac, 0.25 to 0.50 c.c. at most of the lipiodol or bismuth paste is sufficient. This is injected through a straight lacrimal needle and a Luer syringe, under moderately strong pressure.

For the bismuth paste, a needle the size of a number three Bowman probe is necessary. The lipiodol will pass

Fig 1. (Daily). Miss G. Functional stenosis, frontal view.

through the small needle, particularly if it is somewhat warmed by wrapping a hot cloth around the syringe. If it is desired to outline the canaliculi the injection is continued as the needle is being withdrawn.

The x-ray plates are taken in the occipitofrontal and lateral positions. The lacrimal passages are irrigated to remove the bismuth paste; with lipiodol this irrigation is unnecessary.

The following radiographs will illustrate some of the conditions found:

1. (Bismuth, frontal view.) Functional epiphora of many years duration, in a woman of twenty-three years. She had been treated repeatedly with lavage and dilatation. The plate shows normal ducts, and the futility of any treatment directed toward them is apparent.

2. The same case, lateral view.

Fig. 2 (Daily). Miss G. Lateral view.

3. (Lipiodol.) Epiphora. Sacs and ducts normal. Note the difference in direction and the irregularity in contour of the passages.

Fig 3 (Daily). Lipiodol. Epiphora. Vertical passages normal. Note difference in direction and irregularity in contour of the two sides.

4. (Lipiodol.) Dilated left sac in a baby two and a half years old. He had an inflammatory swelling over the left sac, and it was difficult to differentiate between a prelacrimal and lacrimal abscess. The plate shows it to be a prelacrimal abscess, the marked dilatation of the sac being due to pressure on its orifices.

Fig. 4 (Daily). Lipiodol. Dilated sac in a baby two and a half years of age.

5. (Lipiodol.) Markedly dilated sacs, and partial stenosis on the left side, in a man eighty-six years of age, complaining of epiphora. His eyes watered most in the morning, or when he awoke from sleep.

Fig. 5 (Daily). Lipiodol. Dilated sac and partial stenosis of left sac in a man eighty-six years of age.

6. Lipiodol. Early stenosis on the right side, in a man complaining of epiphora of six weeks duration.

Fig. 6 (Daily). Early stenosis of right sac.

7. (Lipiodol, only right side injected.) The patient had an intranasal Halle-West operation three years ago. The lipiodol enters the nose through the artificial opening in front of the middle turbinate.

Fig. 7 (Daily). Two and a half years after Halle-West operation on right side. Lipiodol enters nose in front of middle turbinate.

8. (Iodipin.) Regeneration of left extirpated lacrimal sac. (From Stedefeld's article.)

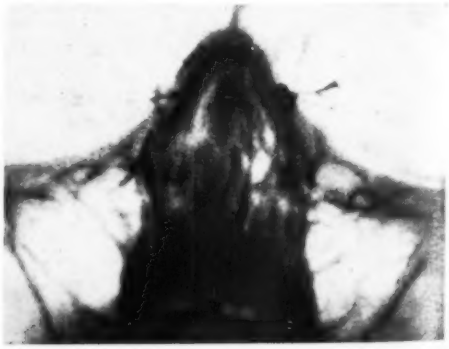


Fig. 8. (Daily). Iodipin. Regeneration of extirpated left sac. (From Stedefeld's article.)

For simplicity of diagnosis it is well to divide the lacrimal passage into a

horizontal part, consisting of the canaliculi, and a vertical part, consisting of the sac and duct. (Fig. 9.) Embryologically, the horizontal portion

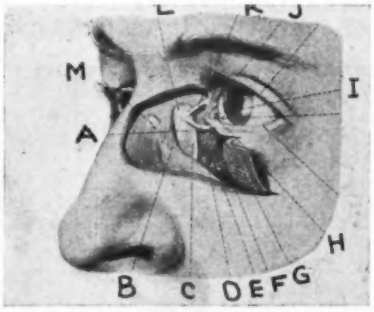


Fig. 9 (Daily). K and D horizontal portion of lacrimal passage. L, A, and C, vertical portion. (Sobotta and McMurrich.)

develops from the conjunctival sac, and the vertical portion from the nose. Pathological affections of one part do not extend to the other.

Given a case of epiphora with normal roentgenographic findings, pathology of the vertical portion is definitely eliminated. The cause must be sought in some lesion of the horizontal portion. It may be a functional disturbance, which is a most frequent cause of epiphora; an anomalous position of the lacrimal puncta, congenital or acquired; a slit canaliculus; or a paresis of the orbicularis.

Epiphora caused by these conditions, while often not amenable to treatment, does not lead to purulent inflammations. The patient may not be able to obtain relief, but he can be assured that this annoyance will not lead to serious complications. Probing, irrigation and operative procedures on the duct or sac are useless and are not indicated.

In contradistinction to this is a roentgenogram which shows stenosis at some point of the vertical portion of the lacrimal apparatus. Dacryocystitis, if not already present, will come as a result of stagnation of secretions. The sac above the stenosis dilates, and the stagnant secretion forms a reservoir for the development of pathogenic bacteria. The pneumococcus, which is frequently present, awaits but a small corneal abrasion to set up a virulent inflammatory process, which may lead to loss of the eye. Phlegmon of the sac and fistulas are not uncommon complications.

In such a case, even if the patient complains only of epiphora, we know that we are dealing with a progressive pathologic process, and it is our duty to check the process, and prevent the development of serious complications. Our aim is to reestablish free drainage and to restore physiologic function. If there is a purulent dacryocystitis, we also wish to rid the sac of infection.

The procedure which fulfills these requirements is intranasal drainage of the sac in front of the middle turbinate. This does not apply to the dacryocystitis of young infants, which is due to congenital atresia of the nasal opening of the duct. These cases usually get well spontaneously, as the embryonic tissue which blocks the nasal opening atrophies, especially if assisted by massage over the sac to keep it free of secretions: rarely, delayed opening may have to be hastened by the passage of a probe.

Operative treatment

Before resorting to operative interference one may try treating the sac with Besredka's bacterial filtrates. Since 1924 a number of Russian ophthalmologists have reported favorable results from this treatment. Some precede the treatment with slitting of the canaliculus. Most of them pack under the inferior turbinate to keep the filtrate from running out through the nose.

The filtrates are prepared by growing pneumococci and streptococci on 1.5 per cent glucose bouillon, for eight to fourteen days; then this is heated at 60° F. for one hour; the solution is sedimented and the clear portion used for injection into the sac.

The majority of men reporting this treatment claim fifty per cent cures, still leaving fifty per cent requiring operative interference. The futility of long-drawn-out probing through a slit canaliculus is admitted by most oph-

thalmologists; indeed, it is wise to respect the integrity of the canaliculi, for we know that the slit canaliculus, with impaired capillary action, is often in itself the cause of a persistent epiphora.

In the choice of an operative procedure, absence of postoperative epiphora and restoration of physiologic function are the advantages of intranasal drainage over radical extirpation of the sac. The absence of an external scar is appreciated by people with highly developed esthetic sensitivity, and, with equal chances for a cure, an intranasal operation is preferable to one requiring an external incision. The choice of intranasal technique will vary with the training of the operator; most of us unconsciously prefer a technique which we have already mastered.

Fig. 10 (Daily). Lacrimal fossa, showing the two halves.

We do the Halle-West operation, which has given us very satisfactory results. To grasp its technique it is necessary to visualize the anatomy of the lacrimal fossa, where the sac lies. (Fig. 10.) This fossa consists of a depression, the posterior half of which is in the lacrimal bone, and the anterior half in the stout posterior edge of the ascending process of the superior maxilla. This depression in the maxillary bone forms a protuberance on its nasal surface. This protuberance is called the torus lacrimalis, and is the landmark for this operation. (Fig. 11.) Charted intranasally, the torus lacrimalis is bounded above by the attachment of the head of the middle turbinate, and posteriorly by the anterior border of the middle turbinate.

Children are operated under general anesthesia, and in adults, after an injection of morphin and hyoscin one hour before operation, anesthesia is obtained by plastering the operative area for ten minutes with cotton saturated

Fig. 11 (Daily). Cross marks torus lacrimalis.

in ten per cent cocain in adrenalin. Halle and West inject the operative area with novocain; for us this injection increases the difficulty of the operation by narrowing the space between the septum and lateral nasal wall, and we find that topical application alone gives a satisfactory anesthesia.

With a Halle or Freer septum knife, a five mm. square piece of mucous membrane, including the periosteum, is removed from the lateral nasal wall in front of the head of the middle turbinate. (Fig. 12.) An incision begin-

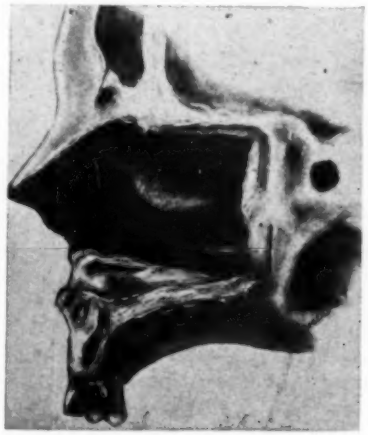


Fig. 12 (Daily). Window resected. Incision made.

ning as high as possible above the anterior end of the middle turbinate is carried parallel to the roof of the nose as far forward as the pyriform opening, and down along the edge of the pyriform opening to the head of the inferior turbinate. This triangular flap

Fig. 13 (Daily). Flap thrown back. Chisel against torus lacrimalis.

of mucous membrane, with the periosteum, is elevated and thrown backward. (Fig. 13.)

The torus lacrimalis is thus laid bare, and as it is chiselled away with a West or Halle chisel the sac is ex-

Fig. 14 (Daily). Sac exposed

posed. (Fig. 14.) The sac is recognized by its bluish-white dense wall. Pressure externally over the sac causes a bulging of the sac into the nose. For more accurate orientation a probe may be introduced through the punctum, and the inner wall pushed inward with probe.

As much as possible of the sac should be excised, for the more of the

Fig. 15 (Daily). Modification of West's forceps.

sac is removed the more certain will be the cure. The most difficult part of the operation is the grasping and holding of the sac, so that it can be

Fig 16 (Daily). Author's hooks.

excised. The sac lies deep, is dense, and is difficult to grasp. Numerous instruments have been devised for

holding and grasping the sac. The ones most commonly used are the West right and left forceps. We have modified this instrument by combining the two into one, and adding a lock. (Fig. 15.)

In 1923 Ruttin exhibited a spear-shaped instrument to engage the sac.

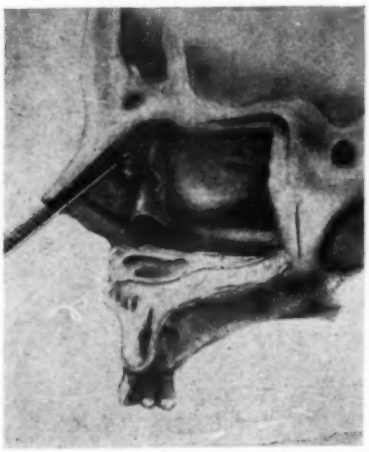


Fig. 17 (Daily). Hook engaged in sac.

We have devised sharp-pointed right and left curved hooks, which pierce the wall and fix it, so that it can be destroyed. (Fig. 16.) The hooks simplify considerably this step in the operation: the entire portion of the wall grasped by the hook has to be excised before the hook is loosened. (Fig. 17.) The excision is usually done with the long-bladed Halle knife. In the last few years we have been using instead of the knife the electrocautery (fig. 18), with which we find it easier to destroy a greater portion of the sac.

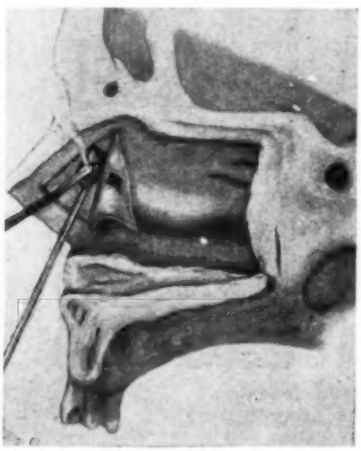


Fig. 18 (Daily). Electrocautery destroying sac.

When as much of the sac as possible has been destroyed, the mucous membrane flap is replaced, and a small piece of iodoform gauze is packed against it for forty-eight hours. After the opera- is completed, a probe introduced into the canaliculus will pass into the nose through this opening. (Fig. 19.) The opening remains permanently, and along it tears and secretion drain into the nose.

Fig. 19 (Daily). Operation completed. Probe passed through new opening.

The operative reaction consists in a moderate swelling of the lower lid, which disappears in two to four days. Usually, secretion and epiphora disappear within the next few days, and there is no after treatment. If granulations form around the opening, they should be removed. When healing is complete, the appearance in the nose is normal, and it is difficult to recognize that operative interference has taken place. When a high septum deviation interferes with free access to the operative area, a submucous resection should precede the operation at the same sitting.

The results are given in various percentages by different operators. West claims ninety per cent cures; Boeckstein ninety-six per cent; Wajatschek seventy-three per cent; Fenton sixty per cent; Frieburg seventy-one per cent; and Polyak eighty-five per cent. The percentage of cures increases with a more careful selection of cases. Where the canaliculi have previously been slit, or a lesion of the horizontal portion complicates the dacryocystitis, the prognosis for a complete cure is not so good. An enlarged head of the middle turbinate may block drainage, and a cure may set in after the head is removed. The results of this operation are particularly gratifying in acute phlegmonous inflammations, and in corneal ulcers due to dacryocystitis. In phlegmonous inflammations the relief is immediate, and in corneal ulcers the absence of a postoperative bandage is an added advantage.

Chilow made bacteriologic investigations of the presence of pneumococci in the conjunctival sac before and after the operation. He concludes that pneumococci disappear from the sac simultaneously with the disappearance of secretion. As long as symptoms of dacryocystitis persisted he found pneumococci of undiminished virulence in the conjunctival sac. As the symptoms cleared up, the colonies grew scarcer, and they finally ceased to grow with the cessation of discharge.

That this opening does not serve as a pathway for pathogenic bacteria from the nose into the conjunctival sac was established by Cirincione. He packed against the opening a tampon saturated with a bouillon culture of microorganisms, and left it there for twenty-four hours. Before removing the tampon he took a culture from the conjunctival sac, and after removing the tampon he took a culture from the nose. In three cases thus examined, only the nasal cultures were positive.

The following case reports will illustrate the behavior of these cases:

Case 1: Mrs. J.P., fifty years old. Complains of an inflammation of the right eyelids, and a purulent discharge from that eye for ten years. Examination shows a mild eversion of the lower lid, and hypertrophy and marked congestion of palpebral conjunctiva. Pressure on the sac forced out a profuse quantity of tenacious mocopurulent secretion. On irrigation the fluid returned through the upper canaliculus, and none could be forced into the nose. On April 22, 1926, we did a Halle-West operation on the right sac. The patient made an uneventful recovery, although she was treated for sometime afterward for the conjunctival condition which had resulted from the irritation of the secretion and was probably aggrevated by wiping. When seen last in May, 1928, she had no recurrence, and her eyelids were normal.

Case 2: Mr. C.B., sixty years old. Had purulent discharge from right eye for twenty-five years and a mucocele for five years. The canaliculus has been slit, and he has been treated with probes repeatedly. Some days ago the swelling over the sac became large and extremely painful. He was first seen at night, and, to give him some relief, some of the secretion was aspirated from the mucocele by introducing a needle into it. He was operated intranasally. September 9, 1926, and a large mucocele evacuated into the nose. He had immediate relief of pain. There was no recurrence of secretion, and the epiphora is so mild that he considers

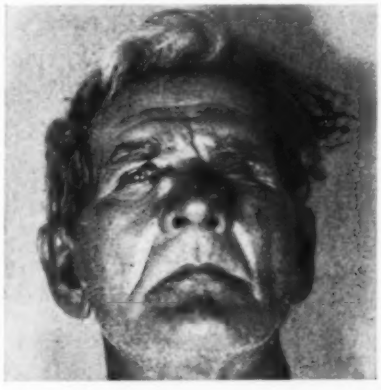


Fig. 20 (Daily). Mucocele of right sac, before operation.

himself cured. (Fig. 20, before the operation. Mucocele on right side.) (Fig. 21, after the operation. No external scar.) (Fig. 22, x-ray picture of probe introduced into the nose a year after the operation. It enters the nose through the artificial opening.)

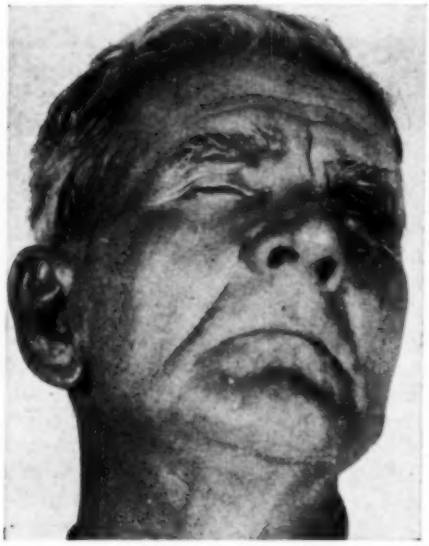


Fig. 21 (Daily). Mucocele of right sac, after operation.

Case 3: Mr. C. R., fifty-four years old. Came for cataract extraction in left eye. Examination revealed a chronic conjunctivitis, and purulent secretion in lacrimal sac. October 5, 1926, we did a submucous resection and a Halle-West intranasal opening of the sac. The conjunctivitis cleared up in four weeks, and cataract extraction on November 11, 1926, was followed by an uneventful recovery. The patient has been free from secretion and epiphora since.

Fig. 22. Roentgenogram of probe introduced into the nose one year after Halle-West operation; probe enters nose high up.

Bibliography

Asbury, M. K. Visualization of lacrimal passages by the use of lipiodol. Transactions of Amer. Acad. of Ophth. and Otolaryng., 1927, p. 85.

Baily, J. H. Surgical anatomy of lacrimal sac. Amer. Jour. Ophth., 1923, v. 6, p. 665.

Bockstein, F. Erfahrungen mit 150 endonosalen Dakryocystotomien. Zeit. für Hals-, Nasen- und Ohrenheilkunde. 1925, v. 13, p. 223.

Campbell, D. M., Carter, J. M., and Doub, H. P. A method for roentgen ray demonstration of nasolacrimal passages. Amer. Jour. Roentgenology, 1922, v. 9, p. 381.

Callahan, J. F. Treatment of acute and chronic dacryocystitis with silver canulæ. Laryngoscope, v. 38, p. 805.

Chilow, K. L. Resultate der Westschen Operation bei Dakryocystitiden. Zeit. für Hals-, Nasen-, und Ohrenh., 1925, v. 11, p. 518.

Fenton, R. A. Indications, contraindications, and preparations for dacryocystorhinostomy. Laryngoscope, 1923, v. 32, p. 67.

Gilbert, J. J. Epiphora after extraction of lacrimal sac. Laryngoscope, 1921, v. 31, p. 938.

McBean, G. M. Oil injection in the treatment of lacrimal duct stenoses. Amer. Jour. Ophth., 1926, v. 9, p. 119.

McCoy, L. L. Nonoperative treatment of dacryocystitis. Amer. Jour. Ophth., 1927, v. 10, p. 751.

Maliniak, J. Dacryostenosis following ozena operations and its cure. Laryngoscope, 1925, v. 35, p. 303.

Mosher, H. P. The combined intranasal and extranasal operations on the lacrimal sac. Laryngoscope, 1923, v. 32, p. 1.

Raia, V. S. Toti's operation for dacryocystitis. Amer. Jour. Ophth., 1925, v. 8, p. 547.

Sauer, W. E. Dacryocystorhinostomy;combined methods. Laryngoscope, 1923, v. 32, p. 26.

Stedefeld, Hugo. Zur röntgenologischen Darstellung der Tränenwege. Zeitschrift für Hals-, Nasen-, und Ohrenheilkunde., v. 17.

West, J. N. The intranasal lacrimal sac operation. Arch. of Ophth., 1926, v. 55, p. 351.

VACCINE THERAPY IN DISEASES OF THE EYE

CONRAD BERENS, M.D., AND RAY R. LOSEY, M.D.

ASSISTED BY

HENRY T. SMITH, M.D., AND LILLIAN BOND

NEW YORK

Experiences in the application of various forms of vaccine therapy are described and tabulated. The authors' conclusions favor the use of intradermal tests for hypersensitivity to certain bacteria, and for staphylococci and streptococci Besredka's method of intradermal administration of vaccine has been found beneficial. The trend in favor of general bodily régime and heliotherapy for ocular tuberculosis, as compared with tuberculin, is emphasized. Read before the Eye, Ear, Nose, and Throat Section of the Medical Society of North Carolina, May 1, 1928. From the Eno Laboratory, New York Eye and Ear Infirmary.

In this paper observation in the use of specific and so-called therapy in treating diseases of the eye is summarized in the hope of stimulating discussion. How faulty or incomplete observation may be is well shown by the fact that Paul Bert, one of the greatest observers of his time, erred in attempting to controvert Davaine's claim, made in 1863, that anthrax was produced by a parasite which he had found (1850) in the blood of animals suffering from this disease. Paul Bert contended twenty-six years later that he could kill the parasites with oxygen and yet produce anthrax by injecting the blood of the diseased animal, and that the parasites therefore could not be the cause of anthrax. His error was in having overlooked the spores described by Robert Koch in the same year (1876). It required all the influence of Pasteur to quiet the controversy. To whom then shall be given authority to say when ultimate truth has been defined at any point?

Under the head of specific therapy the use of vaccines in the prophylaxis and treatment of ocular diseases will be discussed. There is no doubt that sera and vaccines act specifically in the prevention of disease, but that the nonspecific action of these agents must be considered an important factor in the treatment of many diseases is no longer doubted even by Wright[1], who was the real backbone of the theory of specificity. The idea that each disease had its own specific cure did some harm, for it long delayed recognition of the nonspecific action of many of the valuable therapeutic measures which were considered specific in their action.

Even though Rumpf[2] in 1893 obtained as good results with bacillus pyocyaneus vaccine in the treatment of typhoid fever as Fraenkel[3] did with typhoid vaccine, and although Matthes in 1894 obtained as good results in treating tuberculosis by injections of deutero-albumose as with tuberculin, it was not until 1910 that the importance of the nonspecific factor in the therapy of disease was given full recognition by the more conservative physicians.

Between 1910 and 1915 were published many studies which showed the value of nonspecific vaccines in the treatment of disease; and Petersen, Jobling, and others emphasized the value of protein-split products. Since then, many protein and nonprotein substances have been suggested for the treatment of infectious diseases. It is possible that their final action may be of protein origin, since in the injection of hypertonic salt solution, for example, the protein in the blood may be split and the subsequent reaction may be due to the presence of these homologous proteins in the circulation. The same thing may hold true for injections of turpentine, for the latter may cause destruction of the tissues, and absorption of the proteins into the circulation may be responsible for the beneficial reaction.

Prophylactic and therapeutic active immunization by the use of vaccines

Since there are those who insist that any benefit derived from vaccine therapy

is attributable to suggestion or coincidence, it should be understood that we are of the group who believe that, if more were known about proper methods and dosage in the administration of vaccines, the results of treatment of low grade chronic infections and possibly of some of the acute infections would be improved. It takes time for ophthalmologists to familiarize themselves with the methods of administration, and with the indications and contraindications for administering vaccines, but they should study the methods of vaccine therapy and give it a fair trial, though always maintaining a conservative attitude.

It should be clearly understood that the underlying principle of active immunization by means of vaccines is to stimulate the organism to produce protective substances. It is frequently difficult to estimate the dose of a vaccine, but the attempt should be made to administer only as much as the patient can overcome by his own resistance. In an acute infection, if the resistance of the body is extremely low, vaccines may do more harm than good, but in chronic diseases the body has become somewhat accustomed to the infection and reactions of a dangerous nature are not so likely to occur. They should be avoided, however.

That any vaccine exerts an important nonspecific effect even when administered for its specific action was not generally conceded until twenty years after Rumpf had used pyocyaneus bacilli in the treatment of typhoid fever. But this question has now been thoroughly studied by Jobling and Petersen, and those interested are referred to the publications of these authors.

It was a long time before Wright, whose studies had been based on the principle of specificity, was willing to admit the possible importance of nonspecific factors. Even his careful scientific work led to some harm through the indiscriminate preparation by commercial houses of "specific" vaccines for almost every disease and symptom.

In a study by Stone[4] of the use and abuse of bacterial therapy it was found that vaccines had been advised for such conditions as vertigo, pruritus ani, gall stones, and heart block.

Selection of the vaccine

It is believed that slightly better results have been obtained with chemically-killed than with heat-killed vaccines, Casselmann[5] and others having demonstrated that heat destroys some of the antigenic properties of bacterial vaccines.

The antigenic activities of typhoid vaccine, prepared in several ways, were tested for rabbits by Perry and Kolmer[6]. They found that living bacilli were more active than the chemically-killed vaccines, and that heat-killed vaccines had very little antigenic power.

Although Smith has shown that specific antibodies will be produced for each organism injected if a mixed vaccine is used, the test does not demonstrate whether the antibodies are quantitatively equal to those formed after injection of a single type of organism.

As few organisms as possible should be injected, and for this reason intradermal tests may be made to determine which organism produces the greatest local reaction in the patient. It sometimes seems that patients who are most sensitive to minute doses of vaccine are most markedly benefited by the injections provided a very severe reaction is not produced. For carrying out such tests, a special technique has been suggested by Thomas, Famulener, and Touart[8], but, since this requires the active cooperation of a highly trained and interested bacteriologist, the following method has also been employed:

The isolated and identified organisms are prepared so that 1 c.c. of saline solution contains 300 million, 500 million, one billion, or two billion bacteria; after sterilization by heat, 0.5 per cent tricresol is added as a preservative. Sterile physiologic salt solution is used as a control. Intradermal injections are made with each vaccine in amounts of 0.01 to 0.05 c.c., according to the

strength of the vaccine, the general condition of the patient, and the past allergic history, using a tuberculin syringe and a twenty-seven gauge needle.

If the test is negative with a small dose, it should be repeated with a larger amount rather than risk a severe reaction from subsequent injection of an excessive therapeutic dose. The injections are made in the skin of the forearm or on the inner aspect of the thigh above the knee, marking each site to avoid confusion. The reactions

Intradermal tests for hypersensitivene ss to autogenous vaccines; results of treatment

Name	Age	Diagnosis	Organisms found	Source	Sensitivity	Treatment	Results
Mr. R. C.	18	Retrobulbar neuritis, sinusitis.	Mixed, incl. Strep. pneu. and staph.	Nasal	++	Increasing doses.	Sinus cleared, neuritis improved.
Mrs. J. C.	46	Detached ret., chr. ethmoid, high myopia, sec. cat.	Mixed, incl. Staph. aur. and albus.	Dental	+++	Repeated trephine and suction, tonsillectomy, nasal treat.	Complete reattachment after trephine. Sinus cleared.
Mrs. T. B.	70	Hemorrhagic retinitis O.U., bilat. ethmoid, rectal abscess, chorioret. hemorrhagic	Strep. vir. Mixed, incl. Staph. aur., strep., and M. cat.	Nasopharynx	+++ ++	Vaccine 2 mos. Nasal tr. Increasing doses, 9 weeks.	Vision impr. to 18/320 from 2/200 O.D. and 2/100, O.S. Hemorrhages stopped. Improved.
Miss K. W.	34	Chr. cat. conjunct. headaches.	Strep. vir.	Nasopharynx	+++	None	
C. B.	36	Chr. sinusitis, headaches	Mixed, incl. Staph. aur. and pneu.	Nasopharynx	+++	Increasing doses, 1 mo. irregularly.	Improved temp. Headaches less. Discharge less.
Mrs. J. L.		Chr. conjunct., headache, postnasal disch., dizziness.	Mixed, incl. Staph. and strep.	Nasopharynx	+++	Many injections.	Improved. Discharge, vertigo and dizziness stopped. Rheum. cured. Gained 8 to 10 lbs.
Dr. A. W.		Toxic optic atrophy	Mixed, incl. Staph. alb. and pneu.	Nasopharynx	++	None	Not known
Miss F. K.	27	Sinusitis, encephalitis, bilat. paral. of 6th nerves.	Mixed, incl. Staph. aur. and pneu.	Nasopharynx	++++	Increasing doses, 3 mos. Local tr., sinus operation.	Sinus improved. Paralysis enceph., & headache cured.
Miss R. B.		Comp. hyper. astig., headaches without glasses, chr. catarrh. rhinitis.	Mixed. incl. Staph. alb. and pneu.	Nasopharynx	++++	Discontinued	Not known
Mr. H. S.	54	Cataracts, chr. laryng., chr. conj., chr. rhinitis.	Mixed, incl. Staph. aur. and M. cat.	Nasopharynx	++	Two mos.	Much impr.
Mrs. S. M.		Cataracts	Strep. vir.	Dental	++++	Could not tolerate vaccine	Cat. operation successful V. 20/20. Reads J no. 1.
Mrs. S. M.		Cataracts	Staph. aur.	Dental	++++	Could not tolerate	
Miss P. B.	15	Encephalitis, chr. conj., and rhinitis.	Staph. aur.	Nose	+++		No impr.
Mr. B. G.	37	Sclerokeratitis (recurring).	Staph. aur.	Tonsils	++++	Not taken. Tonsillectomy.	Recurrent attacks after tonsillect. 3 apical dent. infect. found.
Miss E. W.	16	Chr. conj., chr. sinusitis, rhinitis.	Mixed, incl. Staph. aur. and strep.	Nasopharynx	+++	No vaccine. Nasal tr.	Improved.
Mr. B. G.	37	Sclerokeratitis	Strep. hem.	Tonsils	++++	Not taken. Tonsillectomy.	Keratitis recurred. 3 dent. infect. found.
Mrs. A. C.	59	Chr. sinusitis, ocular fatigue, headache.	Mixed, incl. Staph. alb., Strep., and M. cat.	Nasopharynx	++++	Not taken. Tried rest, climate and local tr.	Headaches impr. Sinus persists.
Mr. W. W.		Catarrhal conj.	Staph. alb.	Dental	+++	Increasing doses.	No record.

Name	Age	Diagnosis	Organisms found	Source	Sensitivity	Treatment	Results
Miss I. D.		Chr. conj.	Mixed, incl. Staph. aur. and strep.	Naso-pharynx	++++	Twice a week for 5 weeks.	No noticeable impr.
Mr. H. B.	40	Incipient cataract, O. D.	Strep. hem.	Dental	+++	10 inject.	In excellent health, uncertain if due to vaccine.
Mr. H. C.	32	Chr. conj.	Mixed, incl. Staph. alb., strep., and M. cat.	Naso-pharynx	+++	3 times a week	Incomplete treatment.
Mr. W. W.		Catarrhal conj.	Strep. hem.	Dental	+++	Increasing doses	No record.
Miss H. M.		Vertigo, chr. hyperplastic ethmoid.	Mixed, incl. Staph. aur., strep., and M. cat.	Naso-pharynx	+++	None	No further record.
Miss O. S.		Acute iritis O. S.	Mixed, incl. Staph. alb., strep., and M. cat.	Naso-pharynx	+++	Tonsillectomy and local tr.	Could not tolerate. Vision impr.
Miss O. S.		Acute iritis O. S.	B. ozenæ	Naso-pharynx	++++		Could not tolerate vaccine.
Miss M. H.	45	Follicular conj.	Mixed, incl. Staph. aur. and strep.	Throat	+++	None	No further record.
Mr. A. E.	25	Vertigo, paresis of acc.	Mixed, incl. staph. and strep.	Throat	++	Discontinued.	No further record.
Mr. A. M.		Hem. retinitis, chr. ethmoid.	Staph. alb.	Naso-pharynx	+++	Vaccine given, local tr.	Impr., no nasal discharge.
Mr. A. M.		Hem. ret., chr. ethmoid.	Strep. hem.	Naso-pharynx	+++	Vaccine given, local tr.	Impr., no nasal discharge.
Mr. W. F.	47	Uveitis	Staph. aur., Strep. com.	Teeth	++	None	No impr.
Miss G. H.	48	Headaches.	Strep. vir.	Teeth	+	1 injection, then discontinued.	Improved.
Mr. L. S.	8	Foll. conj., series of hordeola.	Staph. alb., pseudo-diph.	Eye	+	8 injections	Improved.
Miss F. H.		Chr. foll. conj., chorio-ret., angiosclerosis, photophobia.	Strep. com., Staph. aur.	Teeth	+	11 injections.	General impr. Phot. impr.

are read after a half hour, twenty-four hours, forty-eight hours, and five days, the size and shape of the urticarial wheal and of the hyperemic areola being recorded in centimeters.

The results of the intradermal tests and the effects of treatment with bacteria obtained from various sources are shown in table 1.

It is our general impression that patients who were most sensitive to the vaccine derived greatest good from the injections, but the best results were obtained by elimination of foci of infection or by establishing drainage. Of twenty-nine patients tested seventeen received injections. Fourteen of the treated cases improved, possibly owing in part to the vaccines. However, since local measures were also used in many cases and foci of infection were eliminated whenever possible, we are unable to make accurate deductions.

The method of selecting the organism by animal inoculation and elective localization, as suggested by Rosenow and approved by Nickel, Neisser, and Nakamura, was not followed in the selection of vaccines used in the treatment of these patients. Benedict and his associates have reported favorably on this method for selecting vaccines in the treatment of inflammatory diseases of the eye. (Transactions of the American Ophthalmological Society, 1926.) If specific vaccine therapy

is proved to be more beneficial than nonspecific therapy in eye diseases, one of these methods may be valuable in selecting the bacteria for injection.

The comparative value of stock vaccine and autogenous vaccine has been a subject of controversy for years. It is our practice to use an autogenous vaccine where possible, based on the belief that the most valid indication for a stock vaccine is treatment of an acute infection when there is not sufficient time to prepare an autogenous vaccine. Examples of such conditions are ulcers of the cornea and postoperative wound infection. That sensitized vaccines, as suggested by Besredka and Metchnikoff[9], have greater immunizing properties than nonsensitized, seems to be borne out by the work of Blandini[10], who studied the protective value of typhoid vaccine in guinea pigs. Now it is believed that, although sensitized vaccines may be slightly superior to ordinary vaccines, this superiority is possibly more theoretical than practical.

Administration of vaccines

In treating chronic diseases by vaccines, the following scheme is suggested:

Name of patient:
Date:
Vaccine:
Source:

1. KEEP THE VACCINE IN AN ICE BOX.

2. First dose: Inject the smallest dose that has produced a purely local reaction to the intracutaneous test. If the amount of vaccine used in the sensitivity test produces a violent local reaction, the first therapeutic dose is reduced by diluting the vaccine with sterile normal salt solution. In some cases it is advisable to reduce the vaccine, in this way, even to a tenth of its original strength.

3. Increase each succeeding dose by 0.01 to 0.03 c.c., if the preceding injection has caused no reaction other than a small local infiltration of the tissues at the site of injection. If any dose produces a severe reaction, do not increase it at the next administration. Keep the amount of each injection well below that which would cause discomfort. Reduce the dose if for any reason an unusual sensitivity appears. Attempt to avoid pustules and hyperemic areas greater than an inch in diameter.

4. Inject the vaccine intradermally if it contains staphylococci or streptococci. If amounts of 0.1 c.c. or more are given intracutaneously, they should be distributed in the tissues at two or more sites.

5. Use sterile precautions. The bottle is covered with a soft rubber cap which should be wiped off with lysol, alcohol, or five per cent carbolic acid before and after the vaccine is withdrawn.

6. Fornier's tuberculin syringe, graduated in hundredths of a cubic centimeter, is a convenient syringe to use.

Until the summer of 1926, most of the injections were given subcutaneously, but it is believed that, particularly in the case of staphylococcic and streptococcic infections, the intracutaneous method suggested by Besredka[11] may be preferable. In some cases, intravenous administration must be used. We believe the latter method is most important when the time factor is to be considered, for example in the treatment of corneal ulcer.

It is possible, in the light of experimental studies by Carrère[12], that we should give small doses of vaccine subconjunctivally. He has shown that in order to raise the resistance of the corneas of animals sufficiently to prevent infection, the injections must be given subconjunctivally, and further, if vitreous infection is to be prevented, into the anterior chamber.

We have not tried the oral administration of vaccines, and Calmette[13] warns that there is meager evidence today as to the benefit derived from this method. Besredka[11] has apparently shown, however, that typhoid vaccine administered by mouth, after ox bile has been given, is as effective

as subcutaneous injections in the prevention of typhoid fever. The dosage and frequency of the injections are important factors. Since in most instances one is attempting to produce active immunity, more harm than good will result if the patient's resistance is lowered by improper dosage.

Streptococcus vaccine

Autogenous as well as stock vaccines have been used in the treatment of diseases of the eye in which streptococci play a causative rôle. The vaccines are usually standardized so that 1 c.c. contains approximately 500 million bacteria. The average initial dose is 0.01 c.c. intracutaneously or subcutaneously. This may be increased gradually according to the reaction, but severe reaction may be produced with 0.01 c.c. Injections may be given every other day or every five days according to indications.

Most observers have expressed disappointment with the results of vaccine therapy with streptococci. Besredka, in his book on local immunity, has possibly given us the explanation for this. He has shown experimentally that practically no immunity results unless the vaccine is administered intradermally, and he believes that any good results obtained by subcutaneous injections are due to vaccine that finds its way into the skin through the puncture made by the needle. The intradermal method of administration has been used by us in cases of ocular inflammation or of vague ocular pain associated with streptococcus infection of the nasal mucous membrane, apparently with good results.

Besredka has also demonstrated experimentally that general, as well as local, immunity may be produced by applying filtrates of streptococci and staphylococci grown in glucose nutrient broth to the shaved abdomen of an animal. If the treated area is small, local immunity results; while if a large area is treated, general immunity is produced.

Besredka filtrates were instilled into the conjunctival cul-de-sac and nasal passages. Results of this treatment in chronic infection of the eye associated with staphylococcic and streptococcic infection of the nasal mucous membrane, and with chronic low-grade sinus infection, have been encouraging.

Of 107 cases treated, 42 replied to the questionnaire sent them. Their answers are summarized as follows:

Cured, 5 per cent.

Great permanent improvement, 19 per cent.

Great temporary improvement, 26 per cent.

Slight permanent improvement, 2 per cent.

Slight temporary improvement, 24 per cent.

No improvement, 24 per cent.

Staphylococcus vaccine

Experience has led us to believe that staphylococcus aureus is a virulent organism which may produce chronic infection of the uveal tract. Three patients who were extremely sensitive to small doses of staphylococcus aureus vaccine intradermally and subcutaneously were suffering from low grade chronic uveitis. In one case (Mrs. W. M.) staphylococcus aureus was obtained in pure culture from all the sinuses; in another (Mrs. E. B.) at the apices of several devitalized teeth, and in a third patient (Mrs. D.), with bronchitis, from the sputum. All were apparently benefited by the vaccines. The staphylococcus aureus vaccine is now given intradermally, making several blebs over the triceps, or in women preferably into the skin of the thigh, although we have also dropped the filtrates into the conjunctival sac and into the nostrils every other day, when staphylococcus aureus had been recovered from the nasopharynx of patients with low-grade chronic infection of the nasal mucous membrane.

Staphylococcus aureus vaccine has also been employed by us in hordeola, but, as local measures were used concomitantly, it was not determinable

whether the vaccines were an important factor in the improvement. Excellent results have been reported, however, by Mayou[14] and Medalia[15], and by others who have used this treatment in these conditions. Gradle has successfully treated several cases of eczematous keratoconjunctivitis with autogenous staphylococcus vaccine.

Several of our adult patients have had chronic ethmoiditis, associated with recurring attacks of eczematous keratoconjunctivitis. Autogenous vaccines made from cultures taken well up in the nasopharynx have apparently been beneficial in checking the attack and in lessening recurrences.

Coley's fluid for the treatment of sarcoma

Weeks and de Schweinitz have both used Coley's fluid in the treatment of sarcoma of the orbit, but the results were unfavorable in each case. Evidently, early diagnosis and early surgical removal are still the most effective weapons for treatment of sarcoma affecting the eyes. In inoperable cases, Coley's fluid may be administered for the beneficial psychologic effect as well as for nonspecific increase of resistance.

Tuberculins

General physical examination should be made by a competent physician before tuberculin in any form is employed in a given case, except possibly to make an intracutaneous test with a minute dose of old tuberculin, beginning with 1/10,000 milligram, or 1/100,000 milligram in retinal tuberculosis. A negative glycerine control and marked local skin hypersensitiveness to 1/10,000, 1/1,000, 1/100, 1/10 or 1 milligram of old tuberculin administered intradermally may indicate an active tuberculous lesion. Pulse, temperature, and respiration should be observed for twenty-four hours after each injection.

We prefer not to produce a focal reaction, as it endangers the eye in retinal tuberculosis. However, even a focal reaction does not necessarily prove that the ocular lesion is tuberculous, for focal reaction also occurs after injections of nonspecific protein, although the dose must usually be larger.

Bacillary emulsion, which is used in treatment, is an emulsion of tubercle bacilli first prepared by Koch[16] in 1901. Treatment is begun with 1/100,000 milligram subcutaneously, unless the patient is hypersensitive or has retinal tuberculosis, in which case the initial dose is 1/1,000,000 milligram. The injection is repeated every three or four days, the dosage not being increased if there is more than the slightest local reaction. General reactions are to be avoided. It is our opinion that the value of the injections may be entirely nonspecific. It is interesting to note that Matthes[17] demonstrated that the supposed specific reaction for tuberculin could also be produced by deutero-albumose, slight differences in reaction possibly being due to toxic peptones in the tuberculin, and the fever usually being produced by protein split products.

We have seen patients with sclerokeratitis who were apparently benefited to a greater degree by tuberculin injections than by sunshine and fresh air, but we have never directed sunshine and artificial sunlight against the closed eyelids, or against the eye for any length of time. Apparently many physicians who are well informed in regard to the treatment of general tuberculosis have abandoned the use of tuberculin, and rely on mental and physical rest and sunshine, both natural and artificial. Certainly ophthalmologists should pay more attention to these two important factors in the treatment of tuberculous cases and other subacute and chronic infections.

Very few undoubted cases of ocular tuberculosis are seen in our office and clinic practice in a large city. We agree with Luedde[18] that, if all possible nontuberculous foci of infection are eliminated, less and less tuberculin will be used, except for its nonspecific effect, in the treatment of eye diseases. Wil-

mer says: "A tuberculous focus seems to render the eye more susceptible (or less resistant) to the poisons of other infections. It is therefore most important to remove every source of infection from the teeth, tonsils, sinuses, etc."

The following conclusions in regard to tuberculin therapy may be justified:

1. Tuberculin therapy is undoubtedly of value in the treatment of ocular tuberculosis, but whether this is due to a nonspecific or to a specific action must be determined by further research.

2. In treating patients with suspected ocular tuberculosis, nontuberculous foci of infection elsewhere should be eliminated, and hygienic treatment should not be neglected.

3. It is of value to continue tuberculin treatment for several months after the infection seems to have been cured. Some authorities rely on decrease in the sensitiveness of the skin as a guide to duration of treatment, but the value of this method has not yet been conclusively proved.

4. Although tuberculin may be of service, especially through its nonspecific effect, in treating ocular tuberculosis, it has been discarded by many of the best American authorities in the treatment of pulmonary tuberculosis. It is possible that ophthalmologists have paid too little attention to mental and physical rest and the use of natural and artificial sunlight in the treatment of their patients.

Gonococcic vaccines

Our preference is for polyvalent gonococcic stock vaccines, for the gonococcus is extremely difficult to cultivate. A number of ophthalmologists have used vaccines in the treatment of gonorrheal conjunctivitis. Alvarado[19] believes that good results are obtained, although the usual local treatment for this disease is carried out at the same time. We have treated three patients with gonorrheal conjunctivitis by subcutaneous injections of gonococcic vaccine, but our results were apparently no better than with other methods of treatment. In cases of iritis suspected of having a gonorrheal origin from a chronic focus in the prostate, in addition to local treatment, we usually give a mixed vaccine of streptococci and staphylococci intradermally and the gonococcic vaccine subcutaneously.

A patient with bilateral metastatic gonorrheal iritis, who showed gonococci in prostatic smears, was treated by Weeks[20] with gonococcic vaccine. Recovery occurred in about twelve days. Weeks believed the vaccine was beneficial. Several authors have apparently obtained better results from intravenous injections of gonococcic vaccine. Good results were obtained by Culver[21] in the treatment of gonorrheal prostatitis. He gave one hundred million killed gonococci intravenously every four or five days for four or five injections. He found, however, that comparable improvement could be obtained with meningococci and colon bacilli, and also with two c.c. of a four per cent solution of secondary proteose made from casein. He concludes, therefore, that the beneficial results were probably nonspecific.

Antianaphylactic treatment of chronic diseases with enteroantigens

It is pointed out by Danysz[22] that under certain circumstances, for instance in great emotion, bacteria as well as undigested albumin may pass through a congested or slightly inflamed intestinal mucous membrane. This observation has prompted the thought that some of the attacks of glaucoma which we have seen were caused by absorption of toxins through the intestinal mucous membrane. The disease thus produced is an allergic reaction.

Danysz and his associates, who have treated 260 cases of chronic disease, contend that the illness resulting from the introduction of these foreign albumins may be successfully treated by antigens taken from the normal intestinal tract, this treatment being con-

sidered neither antiinfectious nor antibacterial, but solely antianaphylactic. They make a vaccine from the aerobic bacteria which grow on the ordinary gelatin slant in twenty-four hours. It seems preferable to make the culture from material collected through a colonic tube.

Although some of the experiments of these authors have indicated otherwise, we believe that the value of this treatment may be due entirely to its nonspecific action. Many of our patients with chronic uveitis were apparently benefited by this form of treatment, but in one case of chronic sinusitis the benefit was only temporary. A patient, seventy years of age, with bilateral complete detachment of the retinas, possibly secondary to bronchitis and asthma, was temporarily benefited, so far as the asthma and bronchitis were concerned, by a combination of enteroantigen with a vaccine made from his sputum. Although reattachment of the retinas did not take place, tension improved in both eyes and the eyeballs became less tender.

The following general conclusions are probably justified

1. The intradermal tests seem to be a valuable means for determining the bacteria to which the patient is hypersensitive. This test, the complement-fixation test, or the determination of the elective localization of the organism found, may furnish valuable data for the selection of bacteria to incorporate in a vaccine.

2. Better results are apparently obtained by the use of vaccines containing bacteria to which the patient is markedly hypersensitive. As a general rule the patients who are most sensitive to the vaccines derive the greatest benefit from the injections. If marked hypersensitiveness exists, care must be taken to avoid marked local or general reaction. The best results are obtained when the focus of infection is entirely eliminated or when excellent drainage is established.

3. Besredka's filtrates have proved of value in some cases of chronic conjunctivitis, particularly those associated with chronic nasal infection. The amount of postnasal discharge and the occurrence of headaches seem to have been decreased in some cases.

4. In chronic inflammatory diseases of the eye due to foci of infection which cannot be eliminated, but where staphylococci and streptococci are found, Besredka's method of intradermal administration of vaccine has apparently been beneficial. Minute doses giving only slight local reaction are continued for several months. Their action may be entirely nonspecific, the main benefit possibly being a temporary desensitization of the patient, as the condition frequently flares up again after the vaccines are discontinued.

5. Although tuberculin may be of value in treating ocular tuberculosis, especially through its nonspecific effect, it has been discarded by many American authorities in the treatment of pulmonary tuberculosis. Possibly, therefore, ophthalmologists have overaccentuated its virtues and have paid too little attention to mental and physical rest and to use of natural and artificial sunlight as therapeutic aids.

6. Careful bacteriologic diagnosis and complete records are recommended, so that group studies over a period of years may finally disclose the relative value of specific and nonspecific factors in the treatment of diseases of the eye with vaccines.

30 East Fortieth street.

Bibliography

[1] Wright, A. E. Brit. Med. Jour., 1915, v. 1, April 10, p. 625.
[2] Rumpf, Th. Deut. med. Woch., 1923, v. 19, Oct. 12, p. 987.
[3] Fraenkel, E. Deut. med. Woch., 1923, v. 19, Oct. 12, p. 985.
[4] Stone, W. J. Jour. Amer. Med. Assoc., 1913, v. 60, Feb. 15, p. 489.
[5] Casselmann, A. J. Jour. Amer. Med. Assoc., 1915, v. 64, Jan. 23, p. 328.
[6] Perry, M. W., and Kolmer, J. A. Jour. Immunol., 1918, v. 3, p. 247.

[7] Smith, Geo. H. Jour. Infect. Dis., 1915, v. 16, p. 313.
[8] Thomas, W. S., Famulener, L. W., and Touart, M. de M. Arch. Internal Med., 1923, v. 34, July 15, p. 85.
[9] Metchnikoff, E., and Besredka, A. Ann. de l'Inst. Pasteur, 1911, v. 25, March, p. 193.
[10] Paladino-Blandini, A. Ann. d'Ig. Sper., 1905, v. 15, p. 295.
[11] Besredka, A. Immunisation locale, 1925, Masson et Cie, Paris.
[12] Carrère, L. Ann. d'Ocul., 1924, v. 161, p. 464.
[13] Calmette, A. Ann. de l'Inst. Pasteur, 1923, v. 37, p. 1000.
[14] Mayou, S. Ann. of Ophth., 1912, v. 21, p. 669.
[15] Medalia, L. S. Boston Med. and Surg. Jour., 1914, v. 171, Oct. 15, p. 621.
[16] Koch, Robt. Deut. med. Woch., 1901, v. 27, Nov. 28, p. 829.
[17] Matthes, M. Deut. Arch. f. klin. Med., 1894-1895, v. 54, p. 39.
[18] Luedde, W. H. Amer. Jour. Ophth., 1923, v. 6, March, p. 161.
[19] Alvarado, P. Arch. de Oft. Hisp.-Amer., 1915, v. 15, p. 183.
[20] Weeks, J. E. Trans. Sec. Ophth. Amer. Med. Assoc., 1910, p. 356.
[21] Culver, Harry. Jour. Amer. Med. Assoc., 1917, v. 68, p. 362.
[22] Danysz, J. The Evolution of Disease, 1921, Lea and Febiger, Philadelphia.

For a discussion of some other phases of the general subject of immunology in relation to ophthalmology, see the paper by Berens and others, Atlantic Medical Journal, 1927, v. 30, p. 547.

THE USE OF LENS PROTEIN TESTS BEFORE CATARACT OPERATIONS*

ROBERT H. COURTNEY, M.D.
RICHMOND, VIRGINIA

Description is given of the clinical course of five cases of cataract as regards their sensitivity to lens protein and the results of the use of desensitization measures. It is concluded that some patients have a sensitiveness to lens protein before any operation on the lens is done, while others acquire such sensitiveness after cataract extraction. The lens protein test is regarded as urgent before any operation on a soft cataract, particularly a needling operation. Read before the Virginia Society of Otolaryngology and Ophthalmology.

Verhoeff and Lemoine[1], in their paper before the International Congress in 1922, give a review of the work previously done on sensitization and immunization to lens protein. Uhlenhuth[2] showed that rabbits could be immunized by repeated intravenous injections of ox lens protein so that the blood would give the precipitin reaction with lens protein from any animal source. He further showed that these immunized animals failed to give the reaction with ox serum. In other words, the reaction was tissue specific and not species specific. In 1908, Krauss, Doerr, and Sohma[3] showed that rabbits could be sensitized by single injections of lens protein of various animals, so that they would give fatal anaphylactic reactions to lens protein from any animal source, and they also found this reaction to be tissue specific.

It has been known for some time that after injuries to the lens, accidental or operative, there occur in some cases inflammatory reactions of varying severity, while in others no such reaction takes place. Some ophthalmic surgeons have considered this inflammatory reaction always to be due to infection: others have regarded it as the result of irritation due to lens matter.

It remained, however, for Verhoeff and Lemoine[1] to consider the reaction from the standpoint of anaphylaxis. In 1922, these authors reported clinical and laboratory experiments in the sensitivity to lens protein, and they were able to state that there was a definite type of reaction occurring in the eyes of patients hypersensitive to lens protein after injury to the lens. This action they called endophthalmitis phacoanaphylactica.

The tests for sensitiveness to lens protein were made by injecting 0.1 c.c.

of a ten per cent solution of lens protein intradermally. In Verhoeff and Lemoine's series of forty cases of rupture of the lens capsule, traumatic operative or spontaneous, there were twelve that showed intraocular inflammation, and all these had positive skin tests. In the twenty-eight cases who showed no inflammation the skin tests were negative.

In 1925, Gifford[4] reported the results of dermal reactions to lens protein in eighty-six cases, eleven, or 12.6 per cent, of which gave positive reactions and six of these showed postoperative ocular reactions typical of the endophthalmitis phacoanaphylactica described by Verhoeff and Lemoine. However, eight cases with negative skin tests showed intraocular reactions, and these he considered to be due to the toxicity from autolysis of the lens protein.

Since October, 1926, twenty-six patients have been tested by us with bovine lens extract for sensitivity to lens protein, preparatory to operating for cataract. The preparation used for the tests was the bovine lens extract of Parke, Davis, and Company, this preparation being a one-tenth dilution of whole lens. An injection of 0.1 c.c. was made intradermally in one forearm and in the other arm 0.1 c.c. of normal saline was injected for a control. In cases showing a hypersensitivity there is to be expected an erythema with some elevation and possibly some induration of the skin at the site of the injection.

In none of the twenty-six cases was there any positive evidence of sensitivity to the protein before an operation on the lens was done. It is with those cases, twelve in number, that were tested after operation on the lens that we wish to concern ourselves in this report. Five of the twelve cases showed a pronounced sensitivity to the lens protein some weeks following the operation.

We have tried to make some comparison between the amount of the cortex left to be absorbed and the development of this sensitization, but this has not been informative, as the sensitization occurred in two cases with practically mature cataract and did not occur in many very immature cataracts. We have also tried to compare the time and character of the healing, but could determine no difference in these respects as between the sensitive and the nonsensitive cases.

Bearing in mind the possible danger in needling a secondary cataract, where there was considerable cortex left in these sensitive patients, two were given desensitizing doses of the lens protein before the needling and one was not, but there was no reaction in either. Two cases with juvenile cataracts showed extreme sensitivity to lens protein after needling one cataract. Four of these five cases will be summarized briefly, but one I should like to report in more detail.

Case 1: Mrs. A. G. F., aged fifty-five years. Diagnosis, nuclear cataracts. Tested with lens protein April 27, 1927, no reaction. Preliminary iridectomy next day and cataract extraction July 20, 1927. Uneventful recovery except for slight episcleritis three weeks after operation. There was considerable fluffy cortex left, and on August 31, 1927, a needling was done. This was followed by no reaction, and a good opening was finally obtained. Vision with correction was 20/20 on September 27, 1927. Three months after the operation the lens protein test was strongly positive, giving an erythema eight by eight cm. and persisting three days.

Case 2: Miss A. N., aged seventy-four years. Diagnosis, nearly mature cataract, left, and immature cataract, right. Lens protein test June 1, 1927, negative. Preliminary iridectomy next day and cataract extraction on August 17, 1927, at which time a moderate amount of cortex was left. Six weeks later, October 4, 1927, the lens protein test was strongly positive. She was given desensitizing doses until the intradermal test was negative. November 2, 1927, a needling was done which was

followed by no reaction. Ultimate vision with correction was 20/30.

Case 3: Mrs. C. E. T., aged sixty-five years. Diagnosis, immature cataract, right, and nearly mature, left. Lens protein test March 7, 1927, questionably positive. Preliminary iridectomy March 16, 1927. Cataract extraction five weeks later, with little cortex left. Lens protein test definitely positive April, 1927. Desensitizing doses given until a negative reaction was obtained. Needling operation June 1, 1927, followed by very little reaction. Ultimate vision 20/40.

Case 4: Mrs. M. F. M., aged twenty-five years, developed bilateral cataracts during her first pregnancy, which terminated six months before being seen in March 1927. Lens protein test April, 1927, was negative. She had a needling operation on the right eye on April 26, 1927, followed by considerable absorption of the cortex. Second needling June 3, and third needling October 11, 1927. Just prior to the third needling, the lens protein test was repeated and found strongly positive, giving an erythema four by ten centimeters. Because she had no cortex left and a thin capsule, no desensitizing doses were given. There was no reaction. She wanted an operation on the second eye, but was refused until she had taken the desensitizing treatments. This she has not done.

Case 5: Mr. J. C. B., aged thirty-two years, was first examined in April, 1925. At this time he showed posterior cortical opacities with many vacuoles in the right lens and some equatorial spokes in each lens. The cataracts developed quite rapidly and in eight months the cataract in the right eye was practically mature and the vision in the left was 20/100. In January, 1926, a needling operation was done on the right eye. This was followed by a very rapid swelling of the lens. The tension became very high, necessitating an iridectomy and extraction four hours later. There was considerable reaction following these operations, but the eye soon quieted and one month later the vision with correction was 20/15.

The cataract in the left eye gradually developed and by July, 1926, was practically mature. He was advised to have an operation on the left eye when this was convenient, and he returned for operation in July, 1927. He was given 0.1 c.c. of ten per cent solution of lens extract intradermally. In two hours time the arm, especially the forearm, was greatly swollen and there was an erythema extending from the hand to the shoulder, this reaction persisting for two days. He was consequently advised to take a series of desensitizing doses of lens protein before the operation. He was allowed to make a trip to Cincinnati, but was advised to see Dr. King there for an injection of the lens protein. This he did, but when Dr. King saw him he found the tension in the left eye (the unoperated eye) to be much increased, and a very flocculent keratitis punctata.

He reached Richmond next day, and an iridectomy was done immediately. The eye remained soft for eight days, but on the ninth day it was harder than before the iridectomy and the punctate keratitis much increased. The question naturally arose as to whether we were dealing with an increased tension from swelling of the lens or whether it was due to cyclitis. Concluding that it was due to a cyclitis, it was decided to use atropine, and this was followed by a rather prompt reduction in the tension with early subsidence of the inflammation. The atropine was continued for some weeks. There was no return of the inflammation and the eye remained soft.

We concluded that in this case we were dealing with a true endophthalmitis phacoanaphylactica induced in a sensitive patient by the intradermal test. Immediately following the secondary glaucoma, he was started on the desensitizing injections of lens protein, beginning with three mg. and doubling the dose at weekly intervals, until 100 mg. dose was given. After the last injection the lens protein test

was repeated twice; both tests giving a negative reaction. It was interesting to note that during the course of injections there was considerable absorption of the cataract, but we venture no explanation of this.

December 27, 1927, the operation on the second eye was done. A keratome incision was made, and after the use of the cystotome much milky cortex was massaged out. We were surprised to find a rather firm nucleus which could not be removed through the keratome incision. As we were afraid of too much manipulation, this nucleus was left. There was only slight reaction following the operation and complete absorption of the cortex occurred within the next two months. To our surprise the nucleus was completely absorbed, and there was left a very thin capsule. The lens protein test was repeated May 10, 1928, and was entirely negative. The capsule was needled subsequently, giving a good opening. At the present time the patient's vision is five-fourths in each eye.

All of the cases in this series were operated upon by Dr. Emory Hill, and with one exception they embrace only those in our private practice. In no case was intracapsular extraction attempted.

It seems that there are a number of patients who have a sensitiveness to lens protein before any operation is done on the lens, although our cases have not shown this. It appears also that there are a number of patients who will acquire a sensitiveness after cataract extraction. In those cases in which considerable cortex is to be encountered at the secondary needling operation, it would appear wise to test the sensitivity to lens protein and, if the patients are sensitive, to desensitize them before the operation. We consider the lens protein test urgent before any operation on a soft cataract, particularly a needling operation, and we feel more strongly the urgency before any cataract operation on the second eye.

Professional building.

References

[1] Verhoeff, F. H., and Lemoine, A. N. Endophthalmitis phacoanaphylactica. Trans. Internat. Ophth. Cong., 1922, p. 234.
[2] Uhlenhuth. Zur Lehre von der Unterscheidung verschiedener Eiweissarten mit Hilfe von spezifischen Sera. Koch Festschrift, 1903, p. 49.
[3] Krauss, Doerr, and Sohma. Ueber Anaphylaxie durch Organextrakte (Linsen). Wien. klin. Woch., 1908, v. 21, p. 1084.
[4] Gifford, S. R., and Steinberg, A. A. Allergic and toxic properties of lens protein. Jour. Amer. Med. Assoc., 1925, v. 85, pp. 351-356.

NEVUS OF THE BULBAR CONJUNCTIVA

Report of case

FRANK H. RODIN, M.D., AND ERNEST M. HALL, M.D.
SAN FRANCISCO

Nevus of the bulbar conjunctiva is comparatively rare. It occurs as a rule close to the limbus, but may occur elsewhere. It is congenital in origin and of a benign nature. The fact that at times malignant tumors develop from these growths renders them of interest and importance. Because of the tendency to become malignant they should be removed as early as possible. From the Division of Ophthalmology and from the Department of Pathology, Stanford University Medical School.

Case: History: A. C., a boy aged six years, was first seen August 10, 1927. A year previously the mother had noticed a small brown spot on the white of the right eye. This had increased in size and recently had become surrounded by a red zone.

Fig. 1 (Rodin and Hall). Congenital nevus of the bulbar conjunctiva.

Examination: The vision was normal. There was (fig. 1) an irregular brown area, about two by three mm., on the bulbar conjunctiva of the right eye, seven mm. from the limbus. This area was surrounded by a hyperemic zone about two mm. in width. It appeared not to be elevated, and was freely movable with the surrounding tissues. No other pigmented spots were seen.

A general physical examination was negative.

Treatment: The pigmented area was removed under general anesthesia. There was no recurrence one year later.

Histologic examination: The specimen consisted of a small black pigmented piece of soft tissue, two mm. in diameter. Microscopic sections (figs. 2 and 3) showed a small papillary growth consisting of a single club-shaped papilla about two mm. long, folded over in the lower third so that the tip lay against the conjunctival surface. The attachment was by a fairly broad base. The surface of the papilla was covered by stratified squamous epithelium of varying thickness. The central core was composed of loose, vascular connective tissue in which there were several small groups of nevus cells. In the connective tissue at the tip and just below the tip of the growth on either side were groups of nevus cells filled with golden brown pigment. Overlying the group of nevus cells on the lower side were three vacuolate areas situated in the deeper layers of the epithelium, in which many pigmented epithelial cells were found lying loosely in the spaces. A number of epithelial cells surrounding the vacuolate areas were also heavily

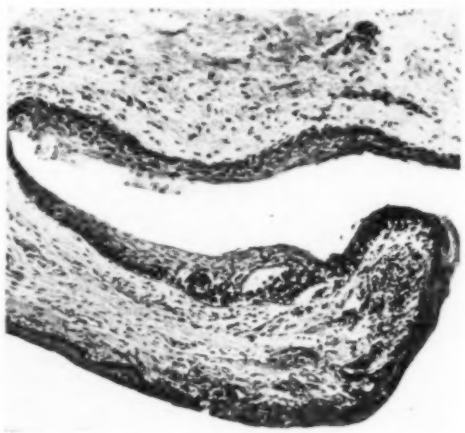


Fig. 2 (Rodin and Hall). Low power photomicrograph of nevus. Note the dark cells (nevus cells) within the epithelium, below the tip on the lower side.

loaded with pigment. The pigmented cells of the connective tissue arranged in small groups immediately below the epithelium were mostly of the stellate type (chromatophores). In many of these, the cell-body was distinctly outlined by the brown pigment granules. There was apparently another type of nevus cell in these areas which had an oval, deeply staining nucleus. These cells contained little or no pigment. The cellular area near the base of the papilla on the outer side was composed largely of these cells.

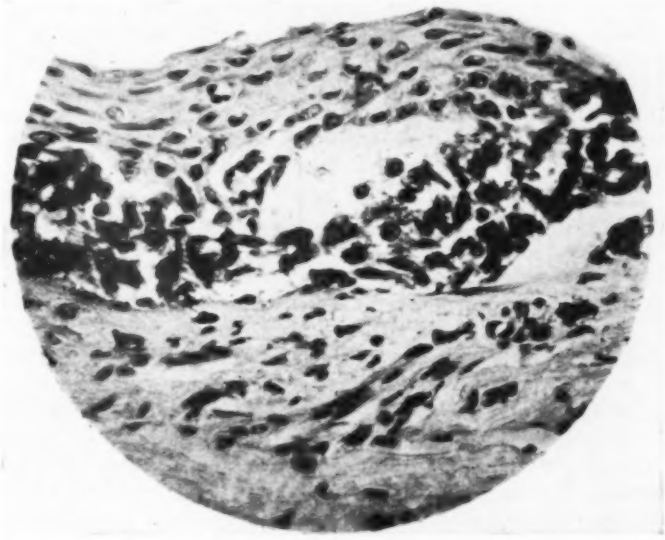


Fig. 3 (Rodin and Hall). High power photomicrograph of the group of nevus cells within the vacuolate areas in the epithelium.

Diagnosis: Pigmented nevus of conjunctiva.

Discussion: The presence of the large pigmented nevus cells in the vacuolated areas within the epithelium suggests that these cells arise from the prickle-cell layer, as claimed by Unna and others. In addition to them, other pigmented cells occur in the epithelium surrounding these areas. These cells, no doubt, have a similar origin. The stellate cells found within the connective tissue (chromatophores) may be derived either from the epithelial cells or from cells normally contained in the fibrous tissue, most probably from the latter.

That nevus cells arise from both epithelial and connective tissue cells is further indicated by the fact that malignant tumors of both epithelial and connective tissue type can arise from them, as was originally reported by Virchow and since then by many other investigators.

In the cases summarized below, both sarcomata and carcinomata have been reported as arising from the nevus cells.

A malignant tumor may arise from a nevus at almost any age; it has been met with at the age of eight years, but usually appears between forty and fifty.

The frequency with which a nevus of the bulbar conjunctiva becomes malignant is well illustrated by the following twelve cases that have been reported in the literature for the years 1925 and 1926:

1. Rosenstein[1] reported the case of a woman aged fifty-three years, in whom after a Koch-Weeks conjunctivitis a congenital nevus of the conjunctiva started to grow rapidly. In ten days there were two prolongations of

the growth extending into the cornea, and in the following ten days these extended two millimeters further. The growth was removed, and the eye was cauterized and treated with radium. The patient was seen one and a half years later with no recurrence. Histologic sections showed sarcomatous transformation of a nevus.

2. Lane[2] reported a case that was seen in 1912. The patient was a man aged thirty-seven years, who had a pigmented nevus, slightly elevated, three by four mm., sharply outlined, pigmented with a brownish-black color, and situated just posterior to the limbus on the nasal side. The area showed no malignant features, but was excised for microscopic study. The section showed the epithelial layer thickened to four or five times the normal for that region. Many cells were crowded with golden-brown pigment. Anatomic diagnosis was pigmented nevus of the conjunctiva.

One and a half years later there appeared a hard smooth mass ten by ten by twenty mm. protruding between the eyelids, and firmly attached by a narrow pedicle to the eyeball at the original site of the pigmented nevus. Microscopically this growth was a moderately vascular, nonpigmented, typical spindle-cell sarcoma. Three years after the removal of the pigmented nevus, the patient returned with both eyelids greatly thickened, and with a recurrent growth on the same side of the eyeball. The growth now had a broad base, eight by five mm., and was four mm. high. Both eyelids and the eyeball were removed. Sections of the eyelids showed round and spindle cells. Attached to the sclera was a nodule consisting of nonpigmented, closely packed small round cells. The bulb was otherwise negative to examination, and the orbital tissue was not involved. The anatomic diagnosis was recurrent epibulbar sarcoma invading both eyelids, originating from a pigmented nevus of the conjunctiva.

3. Morelli[3] removed a large melanotic nevus of the bulbar conjunctiva, with signs of extension toward the cornea. There was no return after two and a half years.

4. Santonastaso[4] reported an epibulbar melanosarcoma originating from a nevus. Starting with a trauma, the growth remained stationary for eleven years and then renewed its growth after a second trauma.

5. Wätzold[5] reported three cases of nevus showing malignancy. The first case developed swelling of the preauricular glands and a section of the tumor revealed apparent malignant changes and vascularity. Enucleation with removal of all the conjunctiva was performed. The second case showed pigmentation of the palpebral conjunctiva due to contact with the nevus; there were no enlarged glands present. The orbit was eviscerated. A year later there was a small local recurrence which was excised. A year after that the patient died from general metastasis. A section showed the picture of basal-cell carcinoma; in the deeper parts the cells were spindled-shaped. The blood vessels were filled with tumor cells. The third case was treated with roentgen ray for three months, although sections showed characteristic cells of malignant nevus. There was an increase in size of the tumor and the orbit was eviscerated. Two years later there were metastases in the cervical glands.

6. Wibo[6] presented a patient with epibulbar cavernous hemangioma which arose from a congenital nevus of the bulbar conjunctiva.

7. Valude and d'Autrevaux[7] reported a case of nevocarcinoma of the bulbar conjunctiva in a woman aged twenty-six years. A nevus the size of a pea was excised, but it recurred in six months, and the secondary growth became larger in size than the original. Sections of the recurrent growth showed a solid tumor, composed of epithelioid nevus cells, with only a few of the cells containing pigment.

8. Szily[8] reported a case of multiple nevocarcinoma in a woman aged seventy-five years. The patient had two

black growths under the upper eyelid. A smaller growth was present on the bulbar conjunctiva, another at the limbus in its upper part. The orbit was eviscerated.

9. Moscardi[9] reported a case of melanotic tumor at the limbus, originating from a pigmented nevus, and showing a tendency to active growth and malignancy. The growth was excised. Histologically it was composed chiefly of pigmented cells.

10. Rizzo[10] reported melanosarcomatous degeneration of an epibulbar cystic nevus in a woman aged sixty-four years.

Summary:

1. A case of congenital nevus of the bulbar conjunctiva is reported.

2. Pigmented nevi of the bulbar conjunctiva show a decided tendency to become malignant, so that early removal is advised.

3. Twelve cases of nevus of the bulbar conjunctiva with malignant tendency were reported in the literature for the years 1925 and 1926.

490 Post street.

References

[1] Rosenstein, A. M. Rasches Wachstum eines Limbus-Sarkoms in einem vererbten Nævus in Anschluss an eine Koch-Weeks-Conjunktivitis. Klin. M. f. Augenh., 1925, v. 75, p. 679.

[2] Lane, F. Extensive sarcoma originating from a pigmented nevus of the conjunctiva. Amer. Jour. Ophth., 1925., v. 8, Sept., p. 698.

[3] Morelli, E. Di un voluminoso neo melanotico, d'apparenza sarcomatosa, della congiuntiva bulbare. Ann di Ottal., 1925, v. 53, Feb., p. 101.

[4] Santonastaso. Epibulbar sarcoma: histology. Soc. Ital. di Oft., 1925, p. 116. Quoted in Ophthalmic Year Book, 1927, v. 23, p. 232.

[5] Wätzold, P. Bösartige epibulbäre Geschwülste (Karzinome). Zeit. f. Augenh., 1925, v. 58, p. 139.

[6] Wibo, M. Hémangiome caverneux épibulbaire. Bull. Soc. Belge d'Opht., 1926, v. 52, April, p. 33.

[7] Valude, E. and d'Autrevaux, Y. Nævocarcinome achrome de la conjonctive bulbaire. Ann. d'Ocul., 1926, v. 163, March, p. 202.

[8] Szily, A. Ausgedehntes epibulbäres pigmentiertes Nävuskarzinom. Klin. M. f. Augenh., 1926, v. 76, p. 570.

[9] Moscardi, P. Tumore melanotico del limbo. Ann. di Ottal., 1926, v. 54, July, p. 760.

[10] Rizzo, A. Epibulbar degenerating melanosarcoma. Lettura Oft., 1926, July, p. 350. Quoted in Ophthalmic Year Book, 1927, v. 23, p. 232.

AN UNUSUAL CYST OF THE FOREHEAD AND ORBIT

HARRY S. GRADLE, M.D.
CHICAGO

A chronic inflammatory cyst, starting in the fossa of the temporal bone, had evidently first forced its way toward the orbital margin, and had then burrowed through the bone and extended posteriorly beneath the orbital periosteum. The patient was a man of thirty-five years. There had been a swelling over the temporal region since childhood, but recently it had increased decidedly, and there was slight exophthalmos.

The following case is reported because of the rarity and because of the unusual findings at operation. C. J. P., a male aged fifty-five years, presented a swelling over the right temporal region which had been present since childhood and which had increased markedly within the past three weeks. Up and out from the outer margin of the right eyebrow was an eight mm. cystic mass that was freely movable. The right eyelid was somewhat thicker than the left and protruded slightly forward.

On eversion of the lid, the normal accessory lacrimal glands were revealed. On deep pressure over the orbit, a mass could be felt in the upper outer quadrant. There was no limitation of motion of the eyeball, although the Hertel exophthalmometer readings were for the right eye 22 mm., left eye 17 mm. The eyeball was externally and ophthalmoscopically normal. The visual field was normal. The left eye was normal. Nothing abnormal was noted in the roentgenogram of the right orbit.

On April 25, 1928, under general anesthesia, a semicircular flap, base up and out, was made over the right temporal region. The cyst was exposed and was dissected free from the very dense adhesions that surrounded it. It had hollowed out a fossa in the bone, about one cm. up and out from the upper outer margin of the orbit. At the base of the fossa was a funnel-shaped hole communicating with the orbit and completely filled by an extension of the cyst. The cyst then bent backward and extended underneath the orbital periosteum nearly to the optic foramen.

It was dissected loose by cutting away the bridge of bone at the upper outer margin of the orbital rim. It was then removed subperiosteally, and the normal contents of the orbit were not disturbed. The periosteum was closed with two catgut sutures and a gutta-percha drain inserted. The skin wound was closed with intracuticular silk sutures.

The wound healed with but little reaction and the exophthalmos gradually receded. On May 24, there was noted a slight periosteal thickening over the orbital notch. By August this had disappeared and there was no longer any exophthalmos. Fundi and fields were normal. No limitation of ocular motion could be found.

Macroscopically the cyst was covered with a smooth gray membrane. On cut section, it presented a centrally placed cavity filled with white cheese-like material. The wall of the cyst was composed of firm gray tissue. On microscopic section, the wall was found to be composed chiefly of dense hyal-

(Gradle.) Chronic inflammatory cyst extending from temporal region into orbit.

inized connective tissue in which there were a few thick-walled blood vessels. On one surface was what appeared to be a layer of lymphocytes, large mononuclears, and histiocytes. There were also proliferating fibroblasts present, with a few young capillaries. In another bit of the tissue, areas of calcification were found to be scattered in the cyst walls. In still another piece, there were scattered lymphocytes and marked compression, and beginning calcification of some of the fibrous tissue. The anatomic diagnosis was that of a chronic inflammatory cyst.

As can be seen in the accompanying diagrammatic cross-section of the orbit, the cyst, which is blocked in solidly in black, evidently started in the fossa of the temporal bone and gradually forced its way through the bone and extended posteriorly underneath the orbital periosteum. A very similar cyst was reported recently by Tibor Verebily in the Orvosi Hetilap (Hungarian), volume 72, no. 2, page 3, 1928. (Abstract in Zentralblatt für die gesamte Augenheilkunde und ihre Grenzgebiete, August 7, 1928, volume 20, no. 3, p. 130.)

58 East Washington street.

A SENSITIVE TEST FOR EQUALITY OF ACCOMMODATION

JOSEPH I. PASCAL, M.A.
NEW YORK

The author's test is based upon retinoscopic comparison of the neutralization points of the two eyes as modified by trial lenses. The patient's eyes fix upon a small test object attached to the retinoscope.

Determination of the exact amplitude of accommodation of each eye separately, either by subjective or objective means, is really a very difficult matter. It is extremely difficult to make very accurate measurements of near point distances at close range where a difference of an inch or less may make a difference in one or more diopters. Fortunately, exactness in determining the monocular amplitude, especially when this is high, is neither necessary nor of any special significance, except in one respect, namely with reference to determining equality or inequality of amplitude as between the two eyes. This determination is important.

Inequality of amplitude of accommodation as between the two eyes may be only apparent and due to an error in the ametropic correction. Such a finding will therefore act as a check on the distance correction. The examiner will seek to ascertain by a check test if this inequality can be removed by modifying the distance correction. But if after repeatedly checking the distance correction the inequality still persists then the inequality is genuine. It may be due to some such process as a sclerosis developing in the crystalline lens of one eye more rapidly than in the other, or to a local derangement affecting the ciliary muscle of one eye only.

The recognition of such inequality of accommodation is important from the standpoint of correction. It is, in general, desirable for comfortable vision at close range that both eyes exert equal efforts of accommodation. Where one eye is called upon to accommodate more than its mate, whether it can so accommodate unequally or not, strain is apt to result. In fact this is one of the causes of strain in cases of anisometropia. And inequality of accommodation is practically anisometropia at close range. In presbyopia such a finding will cause the examiner to consider giving unequal additions to the two eyes for near work. In young people he may consider it wise to modify the distance correction so as to produce apparently

equal amplitudes. But whatever step he may take after finding the inequality is secondary to first finding it.

The inequality of accommodation may be either in the quantity or in the quality of the accommodation or in both. There is a subjective method for finding such inequality of accommodation, especially as to quantity, by rapidly comparing the vision of the two eyes when each focuses separately. The method is to dissociate the two eyes by means of a weak prism base down over one eye and base up over the other. A fine-focusing chart is then moved in toward the eyes while the patient fixes alternately the upper and the lower chart. The examiner then learns from the patient whether or not the print blurs for both eyes at the same moment. If there is inequality of amplitude the print will blur for one eye while still clear for the other. A similar test is conducted with cross cylinders and cross lines.

The above subjective test is mentioned and briefly described largely to show how inadequate it is as compared with the dynamic test. The subjective test leaves out of consideration the possibility and even the probability of slightly greater keenness of vision in one eye than in the other. It overlooks the prevalence of a dominant eye in the vast majority of individuals, which gives a stronger psychic visual effect for that eye. These objections do not apply so much to the cross cylinder, cross lines method, which, however, is open to other objections. Furthermore all subjective tests for inequality are made during the absence of the necessary convergence innervation associated with accommodation in the act of single binocular vision.

All these shortcomings are removed in the dynamic retinoscopy test for equality or inequality of accommodation. This test is therefore the only way of making such a determination accurately and doing it objectively at that. The test was devised by the writer while making original researches in dynamic retinoscopy.

The technique for making this test is as follows: The examiner places himself in the median visual line of the patient so that his own eye and the dynamic chart used are at an equal distance from each eye of the patient. The chart is seen in the plane of the examiner's nodal point by using the "dynascope" mirror. (The "dynascope" mirror is the name applied by the author to a small mirror attached above the retinoscope mirror, and reflecting a series of small charts placed below the retinoscope mirror. The reflected charts are seen as though they were in the nodal plane of the examiner's eye.) The chart used must be of the fine-focusing variety, containing very fine letters and very fine dots to be counted, so as to necessitate accurate focusing.

The patient, with both eyes open, is asked to count the dots or read the letters, or find missing letters, or find letters occurring twice or thrice, or is given such other requests as will compel him to fully exert his accommodation all through the test. Meanwhile the examiner from his initial position, which is chosen at some distance beyond the patient's near point, watches the reflex and shadow movements, working rapidly from one eye to the other. A single flash in the horizontal plane is all that is necessary. As the examiner starts beyond the patient's near point he will, on first observation, get neutral motion in each eye. He then moves in toward the patient, taking care to keep in the median line, while he continues to shadow the two eyes. As long as he gets neutrality of motion in the two eyes, they are both accommodating for the plane of the examiner's nodal point. It may be pointed out again that with the "dynascope" mirror chart, the print is seen in the nodal plane of the examiner's eye.

If there is equality of accommodation in the two eyes, then the neutral will change to a "with" movement at the same time in the two eyes. That is, from a position of neutrality in both

eyes, the examiner on the next approach and the next flash will get a "with" movement in both eyes. But where there is inequality of accommodation the neutral will change to "with" in one eye before it will do so in the other. It will also be markedly "with" in that eye when it just turns from neutral to "with" in the other.

The test so far described is for finding equality or inequality in the quantity of accommodation in the two eyes. But a qualitative test of the accommodative mechanism in the two eyes can be similarly made by watching the sustaining power of the accommodation in the two eyes. If the examiner as he moves in toward the patient, especially so at close range, finds that on successive flashes the neutral movement in one eye changes to a with and then again to a neutral, as compared with a steady neutrality in the other eye, he knows that he has a case of qualitative weakness of accommodation in that eye. There is lack of innervational or muscular force to sustain the actual contraction for as long a time in that eye as in the other. The wavering reflex and shadow in the eye with qualitatively poor accommodation is readily contrasted with the steady reflex and shadow in the other eye.

The dynamic retinoscopy test for equality or inequality of accommodation in the two eyes is made more easily with "teaser" chart, which is attached to the dynascope about two inches in front of the nodal point of the examiner's eye. The examiner uses the same technique as previously described for the "dynascope mirror" chart. But now, as long as the patient focuses the chart, the examiner gets an against movement, as his nodal point is now behind the plane focused. This against will naturally be his initial observation, as he starts from a point behind the patient's near point. He now moves in toward the patient and watches the reflex and shadow in the two eyes for any differences.

If there is equality of accommodation in the two eyes, the against movement will change to neutral, then to with, at the same time in the two eyes. But where there is inequality of accommodation the changes will take place in one eye before they will in the other. There are three comparative observations possible, the against, neutral, and with movements. Moreover, in the against and with movements inequality of accommodation is shown also by the difference in the speed and extent of shadow movements in the two eyes. There are also two stages instead of one for comparing the observable reverses in the reflex and shadow; that is, the change from against to neutral and from neutral to with. Qualitative inequality is readily observed during these transitions of movement from "against" to "neutral" and to "with" by the unsteadiness and waywardness of the changes in one eye as compared with the other.

This test for quantitative and qualitative equality or inequality of accommodation in the two eyes is a delicate one and requires some experience for complete success. But it is not only a unique and sensitive test but one of genuine importance to the examiner. With a little patience and a good instrument the examiner will be well pleased, occasionally thrilled, with his success.

17 West Ninety-fifth street.

CATARACT WOUND INFECTED WITH FACULTATIVE ANAEROBIC STREPTOCOCCUS

H. MAXWELL LANGDON, M.D.
PHILADELPHIA

The case illustrates the fact that, where cultures prior to cataract operation are apparently negative, serious postoperative complications may arise from anaerobic organisms. The offending organism was a nonhemolytic, facultative, anaerobic streptococcus related to the mitis or mitior group. Read before the Section on Ophthalmology of the College of Physicians of Philadelphia, October 18, 1928.

On January 6, 1928, M.B. a negro woman aged sixty-eight years, came to the eye dispensary of the Presbyterian Hospital with the complaint that the vision of both eyes had been gradually failing for several years. There had been no symptoms other than the failing vision.

Examination showed perception of light with good projection in the right eye, and vision of one-fourth in the left eye. The right lens was completely hazy, with some anterior cortex not quite matured; the left lens showed posterior changes and nuclear haze, sufficient to prevent a satisfactory view of the fundus.

Operation on the right eye was advised and agreed to. Cultures from the conjunctiva showed Staphylococcus aureus and albus, in spite of active treatment until April 13, 1928, when they were sterile, and on April 15 she was admitted for operation the following day.

The usual preparation was made and a combined extraction was done without accident. The patient was well behaved and the lens was extracted without difficulty and with no loss of vitreous. The day after the operation the eye was comfortable and the dressing was not disturbed. Dr. J. M. Thorington changed the dressing on Wednesday the eighteenth, two days after the operation. He found the eye in good condition, quiet, with a closed wound and restored anterior chamber.

The following day the writer was told, on inquiry how she felt, that the eye had been painful since the evening before; and examination showed that the lids were puffy, with some secretion along the margin. The conjunctiva was found chemosed, with considerable grayish secretion, the wound open and its lips gray. The eye was well flushed with bichloride of mercury, the lips of the wound touched with silver nitrate. Cultures were made and an injection of five c.c. of boiled milk was given without general reaction or influence on the eye, and two days later ten c.c. were given with a like lack of result. The cultures were sterile, as were those on the twenty-first and the twenty-fifth of the month, the fifth and ninth days after operation. In spite of treatment the eye went steadily down hill, and it was enucleated on April 30, 1928, just two weeks after the first operation. The following is Dr. Cobe's account of the bacterological study:

"Routinely, eye cultures are made from all conjunctivas prior to operation. The usual air and surface organisms (Staphylococcus aureus, albus, etc.) are found. All these organisms grow easily on laboratory media, but occasionally an apparently sterile culture causes trouble, and the question of anaerobic organisms must always be borne in mind.

"Bacteriologically, this case presents an interesting aspect, namely, the problem of the detection of unusual infecting organisms with the usual laboratory media and technique.

"Cultures taken February 3 showed Staphylococcus albus; those of February 30 were sterile; April 6 Staphylococcus albus was found in both eyes; April 8 the patient was admitted to the house. Cultures taken on admission were sterile. Stab cultures showed staphylococcus and the patient was discharged untreated on April 10.

"April 13, cultures were taken and reported sterile just prior to operation. Patient was operated on April 16, 1928. Pus appeared April 19. Cultures were sterile then and again on April 21 and 25.

"April 26, cultures aerobically and anaerobically under oil showed a Gram-positive diplococcus. Pus cultured on April 27 under oil showed a long chain streptococcus and Gram-positive diplococci. Aerobic cultures were sterile.

"Pus cultured from the enucleated eye specimen and from pus from the eye showed short-chain nonhemolytic streptococci, few Gram-positive diplococci, and very occasional Micrococcus tetragenus; while direct smears from the eye specimen and of the pus from the eye were negative for organisms although loaded with pus cells. From a superficial infection at the outer angle of the orbit, pus showed a streptococcus which was morphologically and culturally the same.

"A more detailed study of the streptococcus isolated was undertaken, and it was found at the same time that the colonies of the Gram-positive diplococcus were identical and that if the organism was allowed to grow out for a longer time it developed culturally and morphologically into the streptococcus.

"Under oil there was no production of any appreciable amount of acid. Gas production was slight but definitely positive. Fermentation reactions were as follows: glucose, plus minus acid and gas; sucrose, plus three gas; mannite, plus one gas; lactose, plus minus about equal to glucose; xylose, negative.

"Culturally and fermentatively its reactions correspond to the Streptococcus mitior of Schottmüller or the Streptococcus mitis of Hörder.*

"The streptococcus was isolated anaerobically and planted aerobically in symbiosis with Bacillus subtilis. After the third generation of symbiotic growth the streptococcus could be carried along as streaked out on a blood plate. There was no hemolysis of the hemoglobin. The colonies were not different in type from other nonhemolytic streptococcic colonies, but differed from the pneumococcus colony. The colonies were colorless on agar plates, round discrete about 0.9 mm. in diameter. To make sure it was not a pneumococcus, bile solubility was tested and the organisms did not dissolve.

"Intraperitoneal guinea-pig inoculation produced a superficial abscess at the point of inoculation with 1.5 c.c. of a broth culture (pH 7.6). Apparently this was much less than a lethal dose, as the animal survived and showed very little systemic reaction.

"Based on fermentation and cultural characteristics, therefore, we classify this as a nonhemolytic, facultative, anaerobic streptococcus, related to the mitis or mitior group."

1530 Locust street.

* Münchener, medizinische Wochenschrift, 1903.

EPIPHORA DUE TO RELAXATION

J. H. McKellar, M.D.
PASADENA, CALIFORNIA

For cases of epiphora connected with sagging of the lower lid from lack of tonicity, the author excises an elliptical piece of the conjunctiva and tarsus extending from the lid margin to the sulcus.

Epiphora, a symptom of various abnormal conditions, is complained of by many patients consulting the ophthalmologist. Generally other symptoms are included in the complaint, but not infrequently epiphora is the major cause of annoyance. That constant or frequent lacrimation may produce much discomfort and embarrassment will be readily testified to by any one who has been thus afflicted.

The causes of epiphora are many, but they may be classified under three headings, psychic, reflex, and mechanical.

The psychic classification is familiar in persons of intensely emotional temperament and in neurasthenia.

The causes of reflex lacrimation include such external conditions as cold, smoke, wind, or bright light; errors of refraction and improper use of the eyes; inflammation of the eye or its adnexa, especially if the cornea or iris is involved; nasal anomalies; neuralgia of the fifth nerve; and exophthalmic goiter.

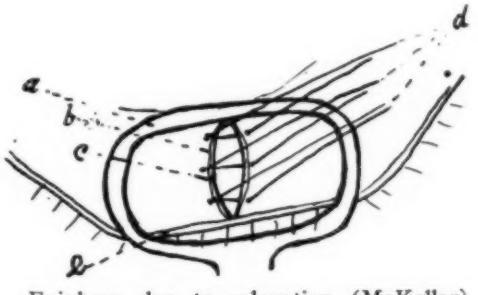
Among mechanical causes may be mentioned the various affections of the lacrimal conducting apparatus from the puncta to the nose including the canaliculi, sac and nasal duct. The canaliculi may be obstructed by a foreign body or by fungus growth. Injury must not be forgotten as a possible cause of obstruction of any part of the conducting apparatus.

Under the third caption there remain to be considered those cases of epiphora which are due to lack of tonicity of the lower lid, the lid no longer lying in close apposition to the globe, and the lower canaliculus being somewhat everted. In the early stages, Fuchs remarks that this condition "bears within itself the germ for its own development".

In elderly people this relaxation may be favored by loss of tissue tone with advancing years, but it is also encountered before old age when the tissues are flabby, the muscle tone poor, and the skin deficient in elasticity.

Exciting causes are those which produce an irritation of the conjunctiva of the lower lid, or indeed any of the factors which cause epiphora. The patient wipes the eye frequently and by so doing he progressively stretches the lower lid, so that it sags. A vicious circle is established, since the more the lid sags and is everted, the more the tearing and hence the wiping.

The condition may be very obvious upon examination, but in the first stages, on the other hand, careful inspection and comparison with the fellow eye may be necessary to discern that the apposition of the lid to the globe and the position of the punctum are not quite normal.



Epiphora due to relaxation (McKellar). (a) lid clamp, (b) conjunctiva, (c) tarsus, (d) sutures, (e) intermarginal space.

The treatment of this condition naturally resolves itself into removal of the cause as far as possible and restoration of the lid to its normal position. Sources of irritation must be remedied, the patient carefully refracted, and faulty use of the eyes avoided. Above all, the patient should be instructed not to wipe

the eye downward but to press the upper lid gently upward and inward. In some cases, especially in younger people, these measures will markedly alleviate the condition.

To restore the position of the lid we must find means to contract the mucous membrane of the lid and to restore to the skin and to the orbicularis muscle. Nitrate of silver from two to five per cent may be applied to the conjunctiva of the lower lid after everting and carefully drying. The silver treatment must not be too long continued lest argyrosis be produced. The patient may be given a solution of sulphate of zinc, two grains to the ounce, to instill into the eye at home several times daily. The patient may also be advised to lean over a basin of cold water to which a small amount of ice may be added, and to splash the water against the closed lids for a period of two minutes twice or thrice daily, afterward gently drying the lids with a soft towel.

Surgical treatment. More stubborn cases will require either light application of the actual cautery to the conjunctiva of the lower lid, or more definitely surgical interference. As a contribution to the treatment of these resistant cases the author wishes to offer a surgical procedure which he has used repeatedly and has found very effective. It consists in the removal of a piece of conjunctiva and tarsus from the lower lid. The technique is as follows:

The conjunctival sac and the skin of the lids and surrounding parts having been aseptically prepared, cocain four per cent and adrenalin one to one thousand are instilled into the conjunctival sac and novocain injected into the lower lid. The lower lid is clasped by a small lid clamp or a large chalazion clamp, so that the conjunctiva is exposed in the clamp down to the sulcus. An elliptical incision is made from the lid margin to the sulcus, through the conjunctiva and tarsus. This incision should begin immediately at but should not include the lid margin. The elliptical piece of tissue thus outlined, its size depending on the amount of ectropion, is excised with the scissors, care being taken not to cut the underlying muscle. The tarsus may now be undermined slightly at either side, and two or three sutures placed to include the conjunctiva and tarsus. These sutures are to be parallel to the lid margin. The two ends of each suture are tied once loosely and the clamp is removed. Such bleeding as now takes place is checked as the sutures are tightened and the knots completed by a second tying. The eye may be dressed for two or three days.

At the completion of the operation there is slight bulging of the skin of the lower lid opposite the site of removal of the piece of tarsus. This bulging entirely disappears in a week or ten days, leaving absolutely no cosmetic blemish. In this respect it is superior to the Kuhnt operation, which is very prone to leave a notch and also bunching of the cilia at the center of the lid margin.

503 Pacific-Southwest building.

SOCIETY PROCEEDINGS

Edited by Dr. Lawrence T. Post
SAINT LOUIS

CHICAGO OPHTHALMOLOGICAL SOCIETY

April 16, 1928

Robert H. Buck, president

Retinal artery obstruction in arteriosclerosis

Drs. Folk and Greenwald presented a woman aged thirty-six years, whose vision in the right eye was 1.2 – 2; and in the left eye 1.0+2. The upper margin of the disc of the right eye was blurry and slightly edematous; the superior temporal artery appeared white for a distance of 1/6 p.d., beginning at the disc margin, but was filled with blood from there on to the periphery. The entire upper temporal quadrant of the retina was pale and slightly clouded. Some of the smaller vessels were buried in edema. In the remainder of the fundus the vessels showed moderate sclerosis. In the left fundus the vessels showed moderate sclerosis, and adjoining a branch of the inferior nasal artery was a small hemorrhage.

Two days later the nasal third of the artery at the site of the obstruction was filled with blood. The visual fields were markedly contracted, with complete loss of the nasal inferior field in the right eye. Five days later more blood was flowing through the obstructed vessels, and one month afterward the artery at the site of the obstruction was almost completely filled with blood. After a few months the artery at the site of the former obstruction showed whitish lines adjoining the blood column, and the outer temporal quadrant of the right disc was pale.

The interesting feature of the case was the fact that the obstruction could be seen with the ophthalmoscope and that the artery was filled with blood beyond the obstruction, there apparently being some seepage of blood through the obstructing mass. This was demonstrated upon examination with red-free light. As to etiology, the woman was young but had a high blood pressure, therefore arteriosclerosis was probably the cause. In most cases in which the etiology was known, embolism was due to cardiovascular or renal disease. The case responded to digital massage. At present the eye was practically normal, though the disc was quite pale. There was still a loss of the inferior nasal quadrant of the field.

Discussion. Dr. Richard Gamble said he had had a case of obstruction of the inferior nasal branch of the central artery due to a blood clot. After the patient was bled thoroughly the clot disappeared. The fields of vision were now good.

Foreign body in eye for nine years

Dr. Hiram J. Smith said that upon examination a perforation was seen in the iris near ten o'clock, through which could be seen the red reflex, and that there was also a corresponding scar in the cornea. There was a slight tinge of brown in the lens, which might have been siderosis. X-ray study showed a foreign body in the viterous, which had apparently been present for nine years. Vision was 20/50; with correction 20/20. Whether the foreign body was metal was not known. The magnet had not been tried, and the foreign body was probably so well encapsulated that it would not be possible to move it with the magnet. This case was contrary to the belief that a foreign body in the vitreous would eventually destroy vision, though in the lens it could be tolerated indefinitely. There were no other signs of siderosis.

Discussion. Dr. W. A. Fisher reported a case in which the foreign body was in front of the lens, having passed through the cornea and dropped behind the iris. The magnet was ap-

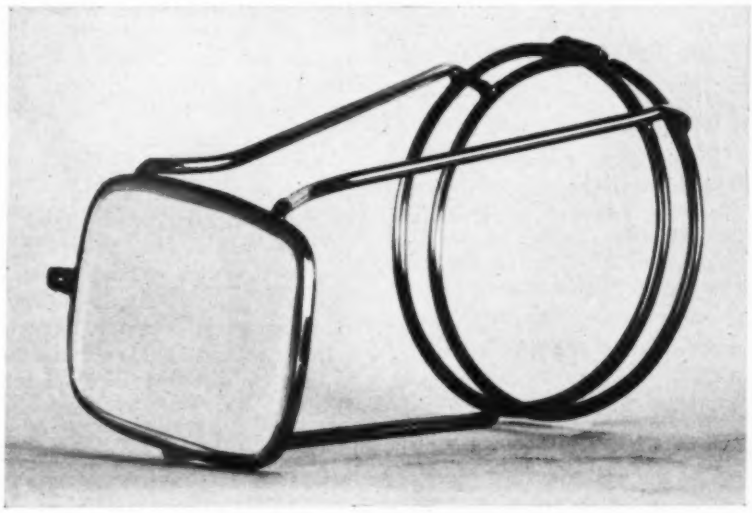
plied at the upper edge of the cornea and the foreign body instantly appeared in the anterior chamber, whence it was readily removed. The man was in the hospital four days, and was discharged with the same vision as when first seen. In this case an erroneous localization had been made by x-ray.

Monocular magnifier with skeleton attachment

DR. THOS. D. ALLEN presented a light and inexpensive adjunct for an amblyopic eye, to enable the eye to read at least coarse type. The principle was the same as in the telescopic spectacle or operating loupe. It consisted of two rings, which allowed it to be clipped over the regular spectacles, and an extension bar holding a plus lens at a distance of four or five (usually 4.5) cm. from the spectacles. The lens might be made of any strength desired: a plus six sphere was usually best.

The plane of the lens was parallel to the rings and therefore to the patient's glass, but set below the glass, in the reading position. It was thus not perpendicular to the line of sight, but so tilted to the line of sight as to obtain a cylindrical effect somewhat resembling that of reading glasses on the market. As it was square, nearly two columns of newsprint might be read without moving the head.

The skeleton attachment allowed the wearer to see elsewhere than merely through the lens. It could be quickly and easily removed and replaced; it was light in weight but substantial. It was only made in the monocular form.



Monocular magnifier (Allen).

Disciform macular degeneration

DR. BEULAH CUSHMAN reported the case described in detail in the American Journal of Ophthalmology, September, 1928, page 720.

DR. C. O. SCHNEIDER also exhibited a case of this rare disease. In his patient the age, history, vision and fundus condition were almost identical with Dr. Cushman's case, the only exception being that his case had more numerous retinal hemorrhages, especially in the left eye, and had decidedly better peripheral than central vision. This man was an accountant, sixty-eight years of age, whose vision was R.E. 6/200, L.E. 4/200. According to the history the eyes had been good until about one year ago, when the patient could still read a newspaper, but from that time vision had failed rather rapidly.

Discussion. DR. E. V. L. BROWN said that two of these cases had been re-

ported pathologically. Dr. Cushman's case seemed thoroughly typical of the condition; Dr. Schneider's case he had not observed. One of the outstanding features was lack of pigmentation, and the pathological report made it more surprising that one did not find changes in the pigment, in view of such extensive changes arising from the choroid. In the right eye there was a disc-sized area of pigmentation along the center of this elevated area of macula, but in view of the history this might have come from hemorrhage many years past. The new formation of blood vessels was interesting and had been reported in many of these cases. Careful reading of Junius and Kuhnt's book would probably show not more than three to have been true cases.

Malignant lymphoma

DR. M. GOLDENBURG presented a case which will shortly be reported in detail in the American Journal of Ophthalmology.

Pericampimeter

DR. C. K. SCHUBERT of Madison, Wisconsin, demonstrated (by invitation) a model of a new instrument for measuring the visual fields.

Demonstration of the Hess coordinometer

DRS. W. H. WILDER and THOS. D. ALLEN presented this graphic method of recording muscular anomalies of the eyes. The subject was given in detail with histories of cases and illustrative charts.

Discussion. DR. EARLE B. FOWLER said that the interesting point, other than the value of comparing two charts of the same case, was the apparent ease of diagnosis of small injuries to individual muscles or combinations of muscles. The picture of damage to one or more muscles was strikingly clear in these diagrams.

DR. WM. A. FISHER asked if Dr. Wilder had found the chart of any value in phorias.

Dr. C. K. Schubert said that it had been stated that any of the phorias, usually under ten or fifteen degrees, did not register, in contrast to the palsies and paralyses, which usually go above ten or fifteen degrees. This had no reference whatever to a visual field. The perimeter would measure the visual field within an "eighth of a degree" or less.

DR. T. D. ALLEN said that divergences up to ten degrees were usually phorias. The hyperphoric divergence above that would show on the chart; below that it might show in the extreme positions. It had not been satisfactory to try to chart the phorias. When one had a real paralysis or a real spastic condition, then it was of value. He himself had about two degrees of hyperphoria in one field and found a slight variation from the normal in that field, but it was unusual to be able to record such a slight variation.

DR. WM. H. WILDER said that the test was not of much value in the phorias, though one used the spots further off in the outsides of the field, which required a wider excursion of the eye to reach. But in the phorias one often had a spastic or a weakened condition, which was so variable that the results would be nothing like so definitely obtained, nor would the chart be so valuable.

ROBERT VON DER HEYDT,
Acting Corresponding Secretary.

SAN FRANCISCO COUNTY MEDICAL SOCIETY

Eye, Ear, Nose and Throat Section

September 25, 1928

DR. WALLACE B. SMITH presiding

Complete oculomotor palsy

DR. J. W. CRAWFORD presented a case showing complete oculomotor nerve palsy with an associated herpes zoster following the second and third divisions of the trigeminal nerve. This was an acute inflammatory lesion, a posterior poliomyelitis involving the semilunar ganglion, the first cervical, and the oculomotor nucleus. Dr. Crawford stated that the neurological literature

showed reports of similar cases involving the geniculate ganglion, and the otic and the chorda tympani nerves.

Dr. Kaspar Pischel read a paper on this subject. He demonstrated on a white albinotic rabbit the excellent results of tattooing with gold chloride, according to the method of Knapp of Basel (see Klinische Monatsblätter für Augenheilkunde, v. 79, p. 433), and tattooing with platinum chloride according to Krautbauer (Klinische Monatsblätter für Augenheilkunde, v. 80, p. 372). Gold chloride gave a dark brown, and platinum chloride a jet black color. Dr. Pischel pointed out that the great advantage of this method of precipitating the color by chemical reaction was the ease of application and the absence of irritation.

Discussion. Dr. Otto Barkan, in the course of the last year, had had occasion to see four cases of involuntary tattooing of the cornea as the result of frequent instillation of twenty per cent argyrol in cases of corneal ulcer. These cases had come to him with a brown incrustation of the base of the ulcer or scar which promised to be permanent.

Dr. George Hosford had undertaken to tattoo a few corneal scars by the old method of scarification and the introduction of carbon particles with various kinds of needles, but had never achieved a result that was the object of much pride on his part or elation on the part of the patient. With this new method he thought he would undertake to tattoo small scars, both for cosmetic effect and to reduce dazzling, with much more satisfactory results.

Marble bones and optic atrophy

Dr. Hans Barkan read a paper on marble bones—Albers-Schönberg disease—and optic atrophy. He showed x-ray plates of the skull and leg bones of a girl of eleven years who had suffered multiple fractures and whom he had seen at the age of three years with slight hydrocephalus and optic atrophy. The diagnosis of marble bones was made recently by x-ray following fracture of both femurs. He drew attention to the rarity of this condition and to the fact that most of the known cases had optic atrophy, due probably to internal hydrocephalus, or perhaps to closure of the optic foramen by the calcification process which in all of the bones filled the medullary cavities. The disease was further characterized by enlarged spleen and lymph glands, varying degrees of secondary anemia, and multiple fractures. He pointed out that optic atrophy seen in children without any other patent cause should lead to x-ray study of the bones.

Discussion. Dr. I. S. Ingber prepresented a case of marble bone disease in a nine year old female child, first examined by him and his associate in 1924, because of a slight injury sustained to her thigh. X-ray examination disclosed a fracture of the upper third of the femur, which subsequently healed, not by bony callus but by fibrous union. It was noted that the femur was uniformly dense, the medullary canal being obliterated. On examination of the other skeletal bones, including the skull, the same changes were noted as in the femur. This child later refractured her femur at the site of the original injury, and it again healed by fibrous union. There was nothing in the family history which could have had any bearing on the etiology.

It might be noted that the cases of marble bone disease with optic atrophy were all in young children. Sick's three cases in young children, reported in the German literature, all had optic atrophy and hydrocephalus. The question arose as to what caused the optic atrophy—the hydrocephalus, the thickening of the foramina at the base of the skull as a result of the added lime deposit, or a combination of both.

If the thickening at the base of the skull was responsible for the pressure on the optic nerve, his case should show optic atrophy rather than Dr. Barkan's case, because the picture of the skull in his case was extremely dense, particularly at the base, whereas Dr. Barkan's case showed a com-

paratively moderate density, most marked near the vertex and in the upper parietal region. Dr. Ingber's patient had never had any visual disturbance. From this and the analysis of Sick's cases, it seemed reasonable to assume that whenever optic atrophy occurred in marble bone disease it was most likely the result of hydrocephalus.

Dr. William Lucas said no change in calcium metabolism had ever been definitely established.

Visual field change after x-ray or surgical treatment of pituitary tumors

Dr. E. B. Towne showed a series of visual fields following roentgen ray treatment of pituitary adenomas. In three cases the fields and the visual acuity were restored to normal, and in one case there was no improvement. One of the apparently cured cases relapsed after two years, and with further roentgen ray treatment the fields shrank and the patient became almost blind. At operation a cyst was evacuated, and there was prompt recovery of useful vision.

About twenty per cent of pituitary adenomas were cystic, and these would not respond to the roentgen ray. The solid adenomas were very susceptible to the ray, and there was good evidence that this method of treatment was safer and gave more lasting results than surgery. About eighty per cent of pituitary adenomas which were operated on had relapses in approximately eighteen months. It seemed probable that those which did well after surgery were the cystic adenomas.

Dr. Towne advocated trial of the roentgen ray in all pituitary adenomas, using a moderate dose and checking up the visual fields before each monthly treatment. Improvement would begin in from three to five months. Those which got worse, or did not improve after four or five months, were probably cystic and should be operated on. Surgery followed by roentgen ray was undesirable, as it was impossible to say which caused the improvement. Cooperation of ophthalmologist, roentgenologist, and surgeon was essential in these cases.

Discussion. Dr. F. L. Reichert stated that the pioneer work of Dr. Towne in developing a combined x-ray and surgical treatment of pituitary adenomas, the symptoms of which were mainly those of impaired vision, had been carefully and thoroughly done and had offered a relatively safe means of helping these patients. Since in most instances x-ray therapy was followed by the production of a cyst, a possible suggestion was that the cyst should be operated upon when the visual fields had returned to within normal limits, rather than awaiting the second appearance of hemianopsia, since in Dr. Towne's case operative removal of the cyst did not lead to normal visual fields.

Dr. J. W. Crawford said there was no unanimity of opinion as to the value of roentgen therapy in these cases. Dr. Charles Frazier had almost entirely abandoned the procedure, as had the roentgenologists Drs. Pancoast and Pfahler of Philadelphia. It was true, however, that the absence of favorable results in their cases might be explained as Dr. Towne suggested by differences in technique. It was rather remarkable that in Dr. Towne's entire series of fields none showed a homonymous hemianopsia, though this type of field was not uncommon. In a series of one hundred and sixty-five brain tumors, reviewed by Dr. Crawford at the University of California Hospital, there were fourteen pituitary tumors, of which three had a homonymous hemianopsia. Practically all of Dr. Towne's cases showed a complete bitemporal hemianopsia or a fourth grade field according to the classification of Dr. Clifford Walker, in which it would be quite unusual to recover central vision fully though the patient peripheral field after complete extirpamight get complete recovery of the tion of the tumor. These cases usually showed permanent damage to the papillomacular bundle.

If roentgen therapy was to be used, Dr. Crawford felt that the importance of most careful perimetric technique must be stressed. Quantitative as well as qualitative perimetry should be used, and the central fields checked by the Bjerrum screen. It was not enough to take these fields with a relatively large test object, as slight temporal slants or a small scotoma might easily be missed. During the past year Dr. Crawford had been mapping all brain tumor fields by the quantitative method, and he showed two fields which illustrated the value of this method.

Dr. Otto Barkan said that in their office they had found color perimetry properly performed to be clinically of greater value and easier of execution than Walker's quantitative perimetry. They did also use small white discs of two mm. diameter, as in the first case that Dr. Towne had shown.

Dr. F. C. Cordes felt that the discussion of Dr. Towne's paper suggested that the perimetric field was one of the important factors in determining the progress of the case. From Ferree and Rand's work, we knew that the fields might differ a good deal under varying light conditions. In this type of case particularly, therefore, perimetry under standard artificial illumination would be most valuable.

Dr. Hans Barkan drew attention to the remarkably quick and almost complete recovery of losses in the field of vision of several cases of pituitary tumor treated by x-ray as shown by Dr. E. B. Towne. He felt that if treatment was prompt, the prognosis for recovery of vision was relatively good even with large field defects, as evidently the defects were caused by physiological block at the beginning, with the nerve fibers still quite able to resume their former visual function if relieved of pressure.

Pituitary insufficiency

Dr. Rodney A. Yoell reported the case of a young girl aged sixteen years, bearing the classical syndrome of pituitary insufficiency. The symptoms included amenorrhea, marked girdle obesity, spaced incisors, tapering fingers, upper arm and cervical spine padding, fifty-five pounds gained in weight in the last six months, and bilateral homonymous hemianopsia. X-ray of the skull by Dr. M. P. Burnham, of Saint Francis Hospital, showed enlarged sella and eroded clinoids. The patient was put on massive doses of pituitary extract and responded well to treatment, with the exception of visual disturbances and headache. Although the Wassermann was negative, the family history was suspicious, and antiluetic treatment was instituted. The patient improved, but the symptoms recurred two years later. She was again put on specific treatment and was again relieved. Eighteen months later she passed into another physician's hands. Gland treatment alone over a period of six months gave no relief. She returned, was again put under treatment for eight months, improved, and stayed improved a year, then passed from observation.

The question here arose as to whether we were dealing with a gumma or at least a luetic disturbance of the pituitary, and, in view of this case and one other seen on the service of Dr. Wm. Engelbach of Saint Louis, it might be wise to use antiluetic treatments as a therapeutic test before a necessarily radical and dangerous operation was resorted to.

Dohrmann K. Pischel,
Secretary.

MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

October 9, 1928

Dr. E. C. Ellett presiding

Cataract extraction with large vitreous loss

Dr. R. O. Rychener presented Mr. H.P., aged fifty-eight years. On April 17, 1928, combined cataract extraction with suture had been undertaken on

the left eye. At the moment that the lens was grasped with Verhoeff forceps and dislocated, the patient squeezed with such force that there was a huge loss of vitreous, enough to cause collapse of the globe. The speculum was removed, the lids were held open with squint hooks, and the lens was delivered in the capsule with a loop and the suture removed. Some saline solution was instilled into the globe, but because of the great vitreous loss the globe remained in a collapsed condition. An attempt was made to replace the iris pillars and approximate the wound margins. The usual dressing was applied. The patient was returned to bed and kept in a prone position for five days, after which the first dressing was done. The wound was found to be closed, the chamber formed, and the pupil was hammock-shaped. There was a good reflex in all directions, although there were a considerable number of opacities in the vitreous. The patient was allowed to be up. Two days later the patient's grandson struck this eye with his finger, causing a hemorrhage in the anterior chamber and vitreous. The blood slowly cleared, and six weeks later some of the fundus details became visible. On August 12, with correction, the vision in this eye was 20/30–2 and Jaeger 10. The iris was still drawn up above the center of the pupil, the pillars being retracted at the limbus. There were many opacities of the vitreous, but fundus details were seen clearly in all directions and seemed normal.

Discussion. Dr. W. L. Simpson, while in Bucharest, had witnessed a collapse of the globe following lens extraction in which the end result had also been good.

Dr. E. C. Ellett stated that, had he not witnessed the operation, it would have been difficult to believe that this was the same eye discussed in the presentation. He remarked that in complications of this sort, it was an excellent idea to leave the eye alone for five or six days.

Buphthalmos

Dr. E. C. Ellett reported the case of a little girl who was first seen in 1919 with the history that the eyes had appeared enlarged for a year following whooping cough. There was a condition of buphthalmos in both eyes, the corneas being 15 mm. in diameter. A corneoscleral trephining with complete iridectomy was done on the left eye, and since that time the eye had not increased in size and had retained enough vision to enable the child to get around. Operation on the right eye was advised, but was not done until 1922, when the same operation was done with peripheral iridectomy. The eye continued to enlarge, and in 1927 developed a calcareous-looking cataract. The eye was enucleated in April, 1928, as it was continuously inflamed and painful. Sections of the eye were shown.

Discussion. Dr. D. H. Anthony had removed such an eye and implanted a glass ball which came out, and which he attempted to replace again with a similar result. He thought that the success of Dr. Ellett's operation was due to the fact that he took up a surplus of capsule in his suture.

Dr. R. O. Rychener,
Secretary.

ROYAL SOCIETY OF MEDICINE, LONDON

Section of Ophthalmology

October 12, 1928

Mr. Cyril Walker, president

Subluxation of the lens

Mr. Hudson showed a case of this kind, due probably to persistence of the posterior vascular sheath of the lens. Vessels could be seen passing over the surface of the iris and bifurcating at the pupillary margin. A confirming feature was the condition of the iris vessels. Mr. Hudson thought it a primitive form of vascularization of the iris. There were finger-like processes in the gap between iris and

lens border. The lens was dislocated forward.

Discussion. Miss Ida Mann agreed as to the congenital causation of this condition. The main area of this iris resembled that stage of development seen from the seventh to the eighth fetal month, at which time atrophy of the central portion of the vascular capsule had not proceeded as far as normal.

Mr. Affleck Greeves reminded the members of a similar case which he had described. That eye was removed, and by means of serial sections he was able to trace a large vessel from the vascular sheath into the iris. In that case there was a persistent hyaloid artery, and blood seemed to be still circulating through the capillaries in the mass of tissue at the back of the lens.

Implantation cyst in anterior chamber

Miss Ida Mann showed a patient with this condition. There was no history of any event which could be regarded as a cause of the condition, though the father stated that the patient had a fall on that side of the head when young, for which, however, no treatment was sought. The present complaint was of photophobia and lacrimation. There were now present two cysts: the larger did not alter in appearance, but the smaller one emptied itself of its contents every two or three days.

Chronic conjunctivitis of one eye

Mr. Humphrey Neame showed a patient in whom there was an engorged swelling of the conjunctiva which had discharged only slightly. A small piece which was removed and sectioned showed small round-celled infiltration, not of any great intensity anywhere. The central part, after six applications of CO_2, was now the flattest part.

Old retinal detachment restored without operation

Mr. Humphrey Neame showed a lady who had had two retinal detachments in 1911, since when the vision had remained at 6/18. The fundus appearance suggested old choroiditis.

Mustard gas burn in the eye

Mr. Humphrey Neame showed a man who had been in hospital three months during the World War on account of severe burning of the eyes with mustard gas. He was now filling a post as clerk, and it had not been necessary for him to cease his work because of the eye condition. Now there was, in one of the eyes, pallor round the cornea, with engorgement of vessels peripherally. Also there could be seen a depressed scar, with an opaque margin.

Cyst of the conjunctiva

Mr. E. Wolff said that implantation cysts arose by the traumatic implantation of skin, epithelium, or hair bulbs into the underlying connective tissues. Parsons said in his work that a cyst was produced by degeneration of the central part of the epithelium; it increased in size by the secretion of epithelial cells which were, so to speak, invaded, and also probably, by a desquamation of the innermost cells. The contents of the cyst varied according to the type of epithelium producing them. They might contain clear watery fluid, mucoid material, hairs, sebaceous matter, and in sheep such cysts might contain wool and fat. They were most common in the fingers and in the palm of the hand, where they might follow puncture wounds. In the conjunctiva their occurrence was uncommon, but they might develop there after injury or after tenotomy wounds, also around foreign bodies. Uhthoff stated that the differential diagnosis from lymphatic cyst was easily made by the fact that the latter was placed in the superficial layers of the conjunctiva, whereas the implantation cyst was obviously deep in it.

The patient on whose case this contribution was based was a sixty year old male who five years earlier had been struck in the right eye by a piece

of coal. Satisfactory healing followed treatment. Three years ago, however, a swelling had started in the wound site, and it had been growing since. The man was noticed to have a cystic translucent swelling, which protruded from between the lids and prevented closure of them. For the most part it was on the inner side of the cornea, but it bulged over the upper and inner part of this structure. There was some choroidal disturbance far forward on the inner side, and some nebulæ were seen on the cornea.

Last May, the eye having been cocainized, two per cent novocaine was injected subcutaneously all around the tumor, an incision was made through the conjunctiva overlying the cyst, and the latter was dissected out whole. At the site of injury, however, the conjunctiva was firmly attached to the cyst, and had to be removed with the tumor. The eye had healed rapidly and now appeared to be normal. Owing to the nebulæ present, the vision was no better than 6/18. The cyst contained clear viscid mucoid fluid; the wall was lined by several layers of squamous epithelium.

Discussion. MR. TREACHER COLLINS referred to a case of his own of the same nature and said there was always the point about these formations as to whether they were really implantation cysts or were downgrowths of epithelium from the surface, i.e., whether there was some connecting link between the surface epithelium and the epithelium lining the cyst.

(Reported by H. Dickinson).

American Journal of Ophthalmology

PUBLISHED MONTHLY BY THE OPHTHALMIC PUBLISHING COMPANY

EDITORIAL STAFF

WILLIAM H. CRISP, Editor
530 Metropolitan building, Denver
EDWARD JACKSON, Consulting Editor
217 Imperial building, Denver
CLARENCE LOEB, Associate Editor
1054 Tower Road, Hubbard Woods, Ill.
LAWRENCE T. POST, Associate Editor
520 Metropolitan building, Saint Louis
EDWARD C. ELLETT
Exchange building, Memphis, Tennessee
HARRY S. GRADLE
58 East Washington street, Chicago
M. URIBE TRONCOSO,
515 West End avenue, New York City

Address original papers, other scientific communications including correspondence, also **books for review** and **exchange copies of medical journals** to the **Editor, 530 Metropolitan Building, Denver.**

Reports of **society proceedings** should be sent to **Dr. Lawrence T. Post, 520 Metropolitan Building, St. Louis.**

Subscriptions, applications for single copies, notices of change of address, and communications with reference to advertising should be addressed to the **manager of subscriptions and advertising, Jean Matteson, Room 1209, 7 West Madison Street, Chicago.** Copy of advertisements must be sent to the manager by the fifteenth of the month preceding its appearance.

Authors' proofs should be corrected and returned within forty-eight hours **to the editor.** Twenty-five **reprints** of each article will be supplied to the author without charge. Additional reprints may be obtained from the printer, the George Banta Publishing Company, 450-458 Ahnaip Street, Menasha, Wisconsin, if ordered at the time proofs are returned. But reprints to contain colored plates must be ordered when the article is accepted.

PRACTICAL ACCURACY IN OPHTHALMOLOGY

What is practical commands the interest of Anglosaxons, rather than fanciful speculation or mathematic theory. It is well that mathematicians and psychologists should be interested in physiologic optics; but it is not desirable that the teaching and textbooks on that subject should all come from them. If more teaching of physiologic optics had been done by those engaged in ophthalmic practice, it is likely that the practical value and importance of facts of visual physiology and optics would be more widely appreciated; and that the loose statements and suggestions of interested salesmen would not be so effective in imposing high-priced instruments on the oculist, or new kinds of tinted glasses on the public.

Retinal adaptation gives the eye a wonderful range of vision, and helps to keep it healthy, under wide variations of illumination. A better appreciation of the importance of healthy adaptation would lessen the number of eyes weakened and made less useful by the constant wearing of glasses "to give protection from excessive light", which impair adaptation by preventing its healthy exercise. There would be less tendency for oculists to be influenced by the suggestion of makers and vendors that everyone should have a pair of tinted glasses. Such suggestions may have more effect on the counter-prescribing optometrist; but they are too often accepted by the oculist, who is told that no "professional man" should hesitate to advise tinted lenses for constant wear.

Accuracy in the prescribing of correcting lenses needs to be considered from the standpoint of what is practical, as well as what conforms to mathematic theory. There was a time when trial cases were furnished with 0.50 diopter, as the weakest lens needed. Anything less than this was supposed to have no "practical" importance. Later a famous ophthalmic surgeon thought he had made a great discovery when he found that to some of his pa-

tients the influence of 0.25 diopter made the difference between comfort and discomfort. Then the pendulum swung the other way, and trial sets were made with a lens for every one-eighth diopter up to two or three diopters.

When the ophthalmoscope became important in the measure of refraction, the lens series was increased until 0.5 D. intervals were furnished up to seven and eight diopters; although Loring, after years of constant use of his instrument to measure refraction, set 0.75 diopter as the minimum error of focusing that could be recognized in the ophthalmoscopic picture. Single diopters were provided up to twenty-three and twenty-four diopters; although these were misleading without knowledge of the exact distance of the lens from the patient's eye. Recently the professor of ophthalmology in a prominent university said that he had never seen a patient who could recognize the effect of one-tenth of a diopter of inaccuracy in a lens. The present writer, in a series of one thousand prescriptions for lenses, for 2,000 eyes, utilized the 0.12 diopter intervals for 471 eyes. But it must be recognized that for the majority of eyes, 0.25 is the smallest interval in the strength of glasses that is of practical importance. The limit for one patient may not be the same as the limit for another; but an "ideal" correction, beyond the limits of practical accuracy, should not be aimed at by the oculist, nor provided for in the trial case.

In his recent address (see abstract on page 1009 of the December issue, from address published in Guildcraft) Cowan reported the testing of some widely advertised meniscus lenses, up to the angle of 30 degrees obliquity, which is beyond the limits of ordinary use. At this angle he found that these "ideal" test glasses, especially calculated for a certain strength of lens and distance of object, gave 0.03 diopter of aberration; while the base six diopter toric lens in ordinary use gave an aberration of only 0.15 diopter, or less than the majority of patients can perceive. Sometimes the lens manufacturer suggests that the chromatic aberration of spectacles is avoided by the special form and character of glass he uses, ignoring the fact that chromatic aberration is almost never noticed, except with the strongest bifocal lenses, in which a glass with high dispersive index is used for the inserted reading glass. To be familiar with some of the basic facts of optics might save the educated physician, who is usually a college graduate and always at least a high school graduate, from falling into traps laid for those sight-testing opticians or optometrists who have no such preliminary education.

Because of failure to discriminate between practical accuracy and refinements of technique that add labor to field taking without yielding more valuable results, visual fields, as taken and reported, have been a subject of confusion and uncertainty to the individual ophthalmologist and in the literature. Much of the literature regarding color field variations is worthless, because the practical reasons for field taking and the facts that alone could furnish solid foundations for clinical conclusions were quite covered up and lost sight of by attention to details of method and elaboration of instruments. New inventions and promising suggestions must be tried; but practical results only come when these have been properly tested, and then too often they prove worthless.

The Peter campimeter was a return to the old method of taking the field on a blackboard with a piece of chalk. Only the blackboard was made portable and more convenient by making it smaller, sacrificing the less important peripheral field and concentrating attention on the more important central area. It is probable that this campimeter is being used to take more fields, and has been used with practical advantage by a larger number of ophthalmologists, than all other perimetric apparatus. It is not an ideal instrument but it is serving a useful diagnostic and

educational purpose. Even the primitive method of confronting the patient and testing if he can see, in the periphery of the field, whether the fingers are moving or still, will yet give certainty, and will train the patient for field taking by other methods, in almost every case. Much thought and ingenuity has been spent on getting uniform illumination in the visual field, and yet the importance of having a uniform background, and of exposure and adaptation of the patient's retina, has only now begun to be appreciated.

Visual acuity is important as a foundation for diagnosis, prognosis, and judgment as to the effects of treatment. The holding up of fingers and asking the patient to count them was in use before cards of test letters were suggested. Snellen, shortly after his attention was turned to standardization of test letters, saw the value of a single figure for all such testing, and published a form of incomplete square for this purpose. Yet to make it conform to the theoretic five-minute angle of his letters he sacrificed simplicity, convenience, and general usefulness. The attempt to make letters of different shapes serve the purpose of an accurate visual test has gone on for two-thirds of a century, and practical accuracy has never been reached in the records based upon such a test. To make the letters of the simplest type equally visible, more than half of them had to be rejected, and among those accepted for such tests some had to be twenty to fifty per cent larger than others. Changes in the light on them, such as often occur in daylight, make an even greater difference in their visibility; and the adaptation of the retina for such tests has scarcely been seriously considered. Here were variations of significance in such tests of great practical importance, while theories of shape and illumination of the letters were elaborated that were of no practical importance at all.

Accuracy is needed as much in ophthalmic practice as anywhere. But practical accuracy is often not theoretic accuracy of the laboratory, of physics, chemistry, or psychology, or of the maker of mathematical instruments. The biomicroscope is a diagnostic instrument of great possibilities. But some of its adjustments, worked out with great care by the makers, have been a serious obstacle to its practical employment in clinic and office. Its power of magnifying one hundred diameters is of very little value in diagnosis. Research instruments may be needed by the ophthalmologist, but instruments of practical accuracy are his ideal, and serve him better in his daily practice.

Edward Jackson.

REFERENCE LITERATURE

The child's curiosity, the desire to know, the impulse to ask questions at every turn, is too often lost in the sense of routine performance, acceptance, and conformity that pertains to adult life. What we know is always a mere molehill to the mountain of what we know not. Most general reading should be done in near proximity to dictionary, encyclopedia, and atlas or gazetteer. Otherwise we lull our minds to slumber and stifle the search for knowledge, so that in the end we are like the careless possessor of an alarm clock, incapable of being stirred to a consciousness of our own intellectual somnolence and retardation.

In medicine, the habit of frequent reference to the thoughts and experiences of others is particularly desirable. It has been objected that as to the functions of memory the oriental is superior to the occidental, the Chinaman to the Caucasian. But it has been very adequately retorted that the westerner, in the Asio-European sense, is superior to the oriental (at least of the older type) in that he exercises his mind to get at the reasons of things rather than to make a mental catalogue of them; so that, remembering essential facts, logical connections, and the places in which he can obtain in a moment any

further information desired, he is in the end better equipped than the man who spends half a lifetime in acquiring words by rote, like a parrot. This does not of course deny the value of storing up useful facts, especially if acquired in their organic relationships.

In most branches of medicine, a great deal that appears in periodical literature is relatively unavailable for use by the practitioner or research worker, since it passes into no sort of orderly, collected, and summarized arrangement by which the average reader or worker may readily trace what he desires to find. Ophthalmologists have for some years been more fortunate in this regard, since in the German language they have been provided with a "Jahresbericht" which annually reviewed the periodical literature, especially of Germany and Austria, but in a reasonable degree of the whole world, while for a shorter period it had been possible to refer to the Ophthalmic Year Book, which gradually extended its scope so as to provide a key to the world's periodical literature of the subject, although here again with a natural bias toward what had been published primarily in the English language.

With the passing of the Ophthalmic Year Book, those who did not read German but who yet desired facilities for literary research in ophthalmology were less advantageously situated. It was to fill the gap thus created that the abstract department of the American Journal of Ophthalmology was enlarged, and that it was classified along lines closely related to those of the Ophthalmic Year Book. Various difficulties of such an undertaking are responsible for the fact that the abstract department of this Journal can not yet and never will claim perfection. The last volume of the Ophthalmic Year Book included nothing later than the eye journals published by the latter part of October, 1926, so that references to most of the literature after that date have been included in the abstract department of the American Journal of Ophthalmology for the year 1928.

During the past year, this Journal has provided its readers with abstracts, usually good, of the original articles in most of the world's special and some of its general literature. Having at first served chiefly for current reading, this abstract department will in the future become a work of reference. For such a work of reference a good index is altogether necessary, and the December issue of this Journal was accompanied by an index which at least attempted to be thorough.

In order to make satisfactory use of a work of reference the reader should familiarize himself with its arrangement. In the first place our abstract department is classified under the heads above referred to and which are listed each month at the beginning of the department. The title of each paper abstracted is given in heavy face type, so that it is a simple matter to run one's eye over any given section for any special topic desired. In the search for particular topics in the index to the completed volume, it should be remembered that the pages of the items belonging to the abstract department are given in parentheses, while the pages of original articles published in this Journal are shown in heavy face type. Miscellaneous references (including society proceedings, editorials, and book reviews) are shown in ordinary type and without parentheses.

Suppose that the reader desires to study the subject of phlyctenular disease. He may expect to find references to this topic under the heading of either cornea or conjunctiva. There are in the index just published six references under "conjunctivitis, phlyctenular", five of them being references to abstracts, under the following titles: "phlyctenular keratoconjunctivitis" (dealing especially with the tuberculin reaction in this class of patient, the author concluding that those who develop the disease are hypersensitive to some foreign proteins); "the frequency of phlyctenular eye diseases at the

Ophthalmic Clinical Hospital in Helsingsfors during the last twenty-five years"; "seasonal changes in the frequency of phlyctenular eye diseases and trachoma" (the author concluding that the frequency of the disease is subject to seasonal changes, corresponding more or less closely to the seasonal changes of tuberculosis); "the etiology of lymphatic keratoconjunctivitis in infants" (finding anemia in most cases, which in the opinion of the author is due usually to the presence of tuberculosis); and "the treatment of scrofulous diseases of the eye". In relation with this last title, another reference to the condition is found under "scrofulous affections of the eye, treatment by general baths of ultraviolet rays".

It would be prudent to investigate references to related topics such as tuberculosis, tuberculin, light therapy, and diet. Such original articles as may be available to the reader are likely to offer lists of references to earlier articles on like topics; and consultation of some of these articles, with further literary research by way of the twenty-three volumes of the Ophthalmic Year Book, would furnish a very wide field of study as to this important subject.

By those who have not previously acquired the habit of collateral reading, this habit will be found to possess a decided fascination, by virtue of the manysidedness of the thoughts and experiences which are unfolded, and the exercise will provide a new interest in the science of medicine and in its daily practice; to say nothing of the benefits conferred upon the patients whose health vicissitudes are the basis of our professional existence.

(See also notice of the Cumulative Index Medicus, on page 51 of this issue.)

W. H. Crisp.

WANTED A "PHYSIOLOGY OF THE EYE"

In ophthalmic literature there is an actual need for a complete and authoritative text upon the physiology of the eye, exclusive of physiologic optics. The latter is so thoroughly covered by the third edition of Helmholtz, the work of Allvar Gullstrand, and the Tscherning textbook that its inclusion would be unnecessary repetition. But the other phases of physiology of the eye have never been collected, and are scattered broad and wide throughout medical literature.

A large number of articles of great importance to the ophthalmologist have appeared in journals that never come under the ophthalmic eye and are not abstracted in ophthalmic journals. Many of these articles would be of vast help in solving some ophthalmic problems that are under investigation, while others attack the same problems from a purely investigative standpoint. Thus the door is wide open for an authoritative compilation of the work that has already been done upon the physiology of the eye.

Several volumes would be needed for comprehensive handling of the subject, and it is not likely that any one author would have the time or capabilities for such a compilation. It would therefore seem appropriate that an editor-in-chief should be appointed, and that he should apportion the work to such volunteer authors as were equal to the task.

Each chapter might well be a joint compilation by a well-read clinical ophthalmologist and a teaching physiologist, and should contain a complete bibliography of all work to date. Among important subjects that should be included in such individual chapters are tear production and tear drainage, normal lid movements, production and drainage of the aqueous, normal pupillary reflexes, the mechanism of accommodation, color vision, the physiology of vision, the physiology of ocular movement, the fields of vision, intraocular circulation and blood pressure, and intraocular tension.

The plan here suggested would in all likelihood involve between three and five volumes, which should be pro-

duced either concurrently or at least without any lengthy intervening lapse of time. The sale of such a set would naturally be limited, and for this reason the work might have to be financed by one of the Foundations. Nevertheless, there is a need for it.

H. S. Gradle.

HYDROPHTHALMUS

Infantile glaucoma is hardly less a mystery than the adult disease or group of diseases known by the same general name. The malady itself is rare, and only a small number of cases have been studied in microscopic sections. Several authors of note have advanced separate and more or less conflicting theories as to the anatomic basis of this disorder.

A very pronounced condition of hydrophthalmus was recently encountered by Cosmettatos (Annales d'Oculistique, 1928, volume 165, page 752) in an infant aged two days. The child died of a bronchopneumonia five days after the clinical examination. Microscopic investigation showed the canal of Schlemm to be present but empty in both eyes. In the left eye the iris, and also a persistent pupillary membrane, was glued to the cornea, in the right eye this was less completely the case, but in each eye there was no communication of the aqueous humor with the angle of the anterior chamber. The sclerocorneal trabeculæ were only differentiated in one eye, and the iris crypts were undifferentiated. The adhesion between iris and cornea must have been produced before birth and particularly before complete resorption of the pupillary membrane, that is to say toward the seventh month of intrauterine life.

From his review of the literature, the outstanding hypotheses regarding the anatomic basis of congenital hydrophthalmus are summarized by Cosmettatos as follows: (1) congenital anomalies of the angle of the anterior chamber and of the canal of Schlemm; (2) vascular and inflammatory modifications of the uvea; (3) ulceration of the posterior surface of the cornea and subsequent interference with the channels of excretion of the aqueous humor; (4) congenital anomalies of the iris. These different ideas have all been propounded by competent observers. That each anatomic condition has existed in certain cases of buphthalmus must be true whether or not this condition was the cause of the clinical picture.

Cosmettatos remarks that neither one of these four theories offers a satisfactory explanation of his case. He believes that adhesion of the iris to the cornea was produced by a crowding of the former tissue toward the latter, due to sudden and profuse hypersecretion of the aqueous humor. This crowding of the iris against the cornea must have lasted for some time. The ciliary processes were much reduced in size, although in other cases they have been found normal.

Cosmettatos concludes that no one cause will explain congenital hydrophthalmus, but that certainly the important condition which exists is a hypersecretion during intrauterine life. These ideas are rather in line with those advanced by Nordensen, who holds that in glaucoma, as the result of distension of the vitreous body, with consequent increase of pressure in the posterior chamber, such hypertension may either be transmitted to the anterior chamber or may be intercepted by the ocular diaphragm. In the latter case there is a deep anterior chamber with moderate tension; in the former a shallow anterior chamber with blocking of the iris angle and congestive glaucoma.

Redslob and Reiss, from extensive studies of enucleated eyes of oxen, have concluded that the slightest variation of hydrogen ion concentration is accompanied by a marked variation of the volumetric contents of the globe. They have also recorded that the addition of so little as 0.02 c.c. of fluid to the vitreous contents was sufficient to increase the normal tension to sixty

millimeters (Schiøtz). Such variations in the hydrogen ion concentration are easily produced by changes in alkalinity and acidity.

These considerations are of interest as having to do with a possible essential cause of glaucoma, irrespective of the question of whether there exists a continual flow through the eye, as most ophthalmologists believe, or whether the intraocular contents are relatively static, as maintained by Magitot and others.

Experiments along such lines as these are difficult to conduct and hard to interpret, but they represent serious attempts to attack this problem at its foundations, and it is from such work that the ultimate solution, if any, will be derived.

It is to be hoped that with the development of ophthalmic institutions in this country, the groundwork of ophthalmology, especially cellular pathology and basic principles of anatomy and physiology, will be given to oncoming students so thoroughly that they may be equipped to undertake the investigation of fundamental problems. At present there are few who have had sufficient training for such research, and facilities for this kind of physiologic and pathologic study have been far from adequate.

Lawrence T. Post.

ERRATA

On the third and second lines from the bottom of column one, page 868, November issue, in the paper by Dr. Silva on the cysticercus, the word "vesicle" should be substituted for "vessels"; and on the seventh line from the bottom of column two, page 870, the word "habitat" should be substituted for "habits".

BOOK NOTICES

Quarterly Cumulative Index Medicus, volume 3, January-June, 1928. Large octavo, 1,143 pages. Chicago, American Medical Association, 1928.

A volume of 1,143 large double-column pages of fine print, wholly devoted to the literature of medicine, a part of the most important medical reference work in the world, deserves notice in the book review pages of every medical journal. A glance over this volume, or either of its predecessors, gives a conception of the greatness of the field occupied by medicine, and of the vast army of workers who are laboring to improve and extend modern medicine, that could scarcely be obtained in any other way.

Not being confined to the literature of ophthalmology, many interested in this special line of work may feel that they cannot give any attention to such a publication. But the illustrations that this volume gives of the interdependence between ophthalmology and other branches of medicine should be important to every one engaged in ophthalmic practice. And, if one wishes to cover the recent literature of a single disease of the eye, this is the only general reference work approaching completeness that is available for searching it out.

The enormous number of references in this volume should not deter the ophthalmologist from using it. The systematic arrangement of its contents renders them available, and gives it value as a work of reference. This arrangement was described in the notice of the first number (see this Journal, July, 1927, v. 10, p. 547). In this present volume we find over fifty references to papers on the cornea and its diseases. These are all found in two successive columns; and under "eyes", in the five successive pages given to this heading, are over two hundred and fifty references to papers of interest to the ophthalmologist that appeared in the first six months of the year.

As a work for future reference, the bound volumes of the series, two each year, like this one contain all the ref-

erences for the four numbers of the "quarterly cumulative index." The intermediate numbers, in paper backs, become duplicates when the bound half-yearly volumes appear, all the references for the six months being included in the bound volume. Of course these intermediate numbers, when issued, bring the references three months nearer to the current date. Whether this advantage for the few who follow the very latest in medical literature is worth the cost of issuing such intermediate numbers, is a question to be considered by the publishers of the series, rather than the subscribers to it.

Edward Jackson.

The retinal circulation in the normal and pathological state, by D. P. Bailliart, Paris, France. Translated by Dr. James Elzar Lebensohn, Chicago, Illinois. With a preface by Dr. Henri Vaquez. The Professional Press, Inc., Chicago, 1928. Octavo, 220 pages.

Lebensohn of Chicago has made a very good translation of one of the most interesting and welcome contributions that have appeared in the last few years. The retinal circulation reflects the cerebral circulation. This is the only place in the body in which the arterial and venous trunks and smaller vessels can be directly seen, and these are highly magnified, so that minute changes are observable by the aid of perfected instruments.

The author applies to their study the methods of the cardiologist, and profits by the exceptionally favorable conditions of direct observation. He treats of the anatomy and above all the physiology of the retinal circulation, giving an important place to the study of local vascular pressure. He then goes on to the disorders of the retinal circulatory function, to lesions of the retinal vessels, and to study of the retinal circulation in pathological conditions.

While the typography of the book is good, the black and white reproductions of the fundus are poorly printed and do not show what the author desires. Proper overlay and underlay of the cuts by the printer would have left this book without a blemish. I am sure that the American translator himself is not satisfied.

H. V. Würdemann.

Government Ophthalmic Hospital, Madras, report for 1927. Lt.-Col. R. E. Wright, I.M.S. Paper, quarto, 30 pages, illustrated. Madras Government Press.

This report has its administrative and its medical side. The latter chiefly interests us; and we find that the heading "accommodation" does not refer to the eye, but to the number of beds available and used during the year. With a bed capacity of 170 the maximum number of in-patients treated in any one day was 371, the daily average 266. The number of medical students in training was 141, and of graduates thirty.

The professional report is made by the superintendent, Col. Wright, with the assistance of the official and honorary staff, eighteen in all. The service included 4,208 in-patients, and 25,899 out-patients; 4,704 operations were done, including 1,652 for senile cataract. This contrasts with the number of refraction cases, 1,980, and 436 cases of fundus disease.

The report explains the previously reported rates of iris prolapse, turned corneal section, and post-choroidal hemorrhage. These, as they were stated, have been made the basis of unfavorable comment, on the part of certain advocates of removal of the crystalline lens in its capsule. A careful review of the evidence shows that these complications have not been more frequent than in large European clinics.

About one-third of the report is

occupied with statistical tables and important practical subjects. These reports record the incidence of various diseases, under conditions widely different from those of Europe or North America. In general they are only made accessible to us in this way; and, by giving them the same consideration as is accorded to more familiar reports, our outlook on problems of ophthalmic practice can be made more comprehensive.

Edward Jackson.

Die Behandlung der Augenkrankheiten in der Allgemeinpraxis (Care of eye diseases in general practice). Dr. Kurt Steindorff, Berlin. 124 pages, with eighteen illustrations. 1928, George Thieme Verlag, Leipzig. Hard covers, 5.80 marks.

In this well written brief discourse, first the general therapy of ophthalmology is presented, with description in sufficient detail of the different remedies and their technique of application, with physiotherapy and nonspecific parenteral methods. Then the treatment of diseases of the different parts of the eye in anatomical order is dealt with, the author always emphasizing those conditions which demand the care of a specialist, and in which the general practitioner must not meddle.

C. Zimmerman.

CORRESPONDENCE

Biomicroscopy of lenticular opacities

To the Editor:

I have read with interest the article on Biomicroscopy of Lenticular Opacities by Dr. Morsman in the supplement to your November number. Among his conclusions Dr. Morsman says that treatment of the patient is rarely changed as a result of additional data obtained with the slit-lamp.

I have published three papers lately in which I draw attention to the great importance of detecting early and minute opacities of the lens. In a series of 150 consecutive patients seen by me in private practice, all of whom attained full normal vision after correction by glasses (those who failed to reach this standard were eliminated from the series), I found that 39 patients, or 26 per cent, had opacities in the lenses. All these cases were found to be associated with some form of focal sepsis, which it was of the greatest importance to the patients' general health to get eliminated by the ministrations of surgeon, physician, throat surgeon, or dentist.

I therefore think that the slit-lamp is of the greatest practical value in the treatment of ocular disease, and also in drawing the attention of the ophthalmic surgeon to the frequent need of referring what at first may seem to be merely refraction cases to some other appropriate specialist.

The papers I have referred to will be published in the Transactions of the Ophthalmological Society of the United Kingdom for 1928, and in the Proceedings of the Royal Society of Medicine, Section of Ophthalmology, November, 1928. By request of the editor of the Dental Surgeon, 8 Henrietta street, Covent Garden, London. I wrote an article on the Relationship between Dental and Ocular Disease, in the number for October 13, 1928.

A. F. MacCallan.

33 Welbeck street
London, England.

ABSTRACT DEPARTMENT

Abstracts will be classified under the divisions listed below, which broadly correspond to those formerly used in the Ophthalmic Year Book. It must be remembered that any given paper may belong to several divisions of ophthalmology, although here it is only mentioned in one. Not all of the headings will necessarily be found in any one issue of the Journal.

CLASSIFICATION

1. General methods of diagnosis
2. Therapeutics and operations
3. Physiologic optics, refraction, and color vision
4. Ocular movements
5. Conjunctiva
6. Cornea and sclera
7. Uveal tract, sympathetic disease, and aqueous humor
8. Glaucoma and ocular tension
9. Crystalline lens
10. Retina and vitreous
11. Optic nerve and toxic amblyopias
12. Visual tracts and centers
13. Eyeball and orbit
14. Eyelids and lacrimal apparatus
15. Tumors
16. Injuries
17. Systemic diseases, including parasites
18. Hygiene, sociology, education and history

---

2. THERAPEUTICS AND OPERATIONS

Fuchs, E. **The ciliary muscle.** Graefe's Arch., 1928, v. 120, p. 733.

The ciliary muscle is considerably altered by simple fixation in formalin. The ciliary muscle in childhood has not the triangular shape of adult life because of the absence of the circular portion and of the interstitial connective tissue in the radiate bundles. The change of the ciliary muscle from the condition of the child to that of the adult begins sometimes after the first year of life, but not infrequently later in the second or in the third year. The meridional portion of the ciliary muscle is usually the same in hyperopic, emmetropic, and myopic eyes. The radiate muscle fibers, while about the same in hyperopic and emmetropic eyes, have in high myopia a different position, and often their number is diminished. The circular muscle bundles vary greatly in emmetropia, are strongly developed in hyperopia, and are absent or very weakly constructed in myopia. Senile changes are sclerosis and hyaline degeneration of the interstitial connective tissue, causing atrophy of the radiate muscle bundles.

H. D. Lamb.

3. PHYSIOLOGIC OPTICS, REFRACTION, AND COLOR VISION

Incze, Anton. **Bodily type and refraction.** Zeit. f. Augenh., 1928, v. 66, Sept., p. 50.

The author made a statistical study of the refractive state of the eye in relation to bodily type according to Kretschmer. (Kretschmer claimed to have found that the two great groups of manic-depressive and schizophrenic psychosis were founded on bodily structure.) The author enumerates four types, asthenic, pyknic, athletic, and an indefinite group in which he places bodily types characterized by endocrine disturbances (acromegaly, eunuchoidism, infantilism etc.).

The pyknic type is refractively most normal, and the abnormal eyes are largely hypermetropic. This the author relates to their open outlook on life, as compared with the myope, who is less intimately bound optically and psychically to his environment. This type is relatively less eager to read because of the effort required to accommodate. The myope on the other hand reads readily, which associates his temperament with the active intellectual type. This refractive state is characteristic for the asthenic bodily type. In the athletic habitué, the relatively high

percentage of ametropia without the preponderance of either myopia or hypermetropia conforms to Kretschmer's belief that from a psychological and psychiatric standpoint these individuals are more nearly related to the asthenic type. *F. H. Haessler.*

Lindner, K. **Subjective methods of determining astigmatism.** Zeit. f. Augenh., 1926, v. 60, Dec., p. 346.

In the first part of this essay the author shows how the rules relating to the determination of astigmatism by means of skiaskopy with cylindrical lenses can be transferred to the very accurate checking of the refractive error subjectively with the aid of a wheelspoke chart.

In the second part he describes his modification of the technique of Trantas called "velonoscopy". The principle of velonoscopy is as follows: If one fixes a point of light an image of the point is formed on the retina and a wire placed before the pupil will diminish the brightness of the image just as decrease in size of the pupil does. If, however, the eye is not focused on the point of light there will not be a clear retinal image but a diffusion circle and the wire will cast a shadow through the circle. The shadow becomes wider as the diffusion circle becomes wider with increasing ametropia. With movement of the wire in relation to the pupil the shadow moves, in the same direction or the opposite, depending upon whether the eye is hypermetropic or myopic. On this principle Trantas has built up the various details of his method. For the luminous point he substituted a cross of white paper on a red background.

Lindner at first had scant success with this somewhat complicated procedure, but after improving it he has used it only as a subjective check after measuring the refractive error by retinoscopy with cylinders, and he is now most enthusiastic concerning the test. In many cases measurements are accurate to one-eighth diopter. He uses the white paper cross on red ground at six meters, and instead of a single wire uses a cross of wire in a diaphragm which he places in the trial frame behind the lenses. He applies only one of the velonoscopic phenomena, namely the width of the shadow. After retinoscopy he makes the eye one diopter myopic by a lens, and asks the patient to observe which white line has the wider red streak in it. Then he inserts minus cylinders with axis parallel to the wider shadow until the shadows are of equal width. Spheres can then be added until the shadows entirely disappear. As the absolute correction is approached the shadows become very narrow and differences in their width become more easily apparent.

(See also paper by Morsman in the A.J.O., 1928, v. 11, June, p. 433.)

F. H. Haessler.

Mills, Lloyd. **Unilateral sighting.** California and Western Med., 1928, v. 28, Feb., p. 189.

Mills claims that the idea that a given object is sighted by both eyes along a line midway between the two eyes, the effort requiring equal amounts of convergence and accommodation, is no longer optically tenable. The line of sight is on the side of the dominant eye, the point of attention being fixed in the line of vision of this eye. The other eye, by its actual movement of convergence to produce binocular single vision, gives the final judgment of distance, dimension, depth and relief. The right eye is the master in the fundamentally right-sided, about seventy-eight per cent of the cases, and the left eye in the fundamentally left-sided, about twenty-two per cent. This true ratio of one to four is concealed by training the righthandedness. Manuality may be reversed by training, but the line of sight is fixed throughout life unless reversed by severe ocular disease early in life or by practical blindness of the master eye in adult life.

Righthanded persons are often discovered to be left-eyed by their indifferent or uncertain golf, shooting and

so on. In all sports the crossed dextrals and sinistrals are at an anatomical and phsyiological disadvantage, as their sighting line and preferred hand are on opposite sides, disarranging the natural relation of the principal motor centers. All the choreic and choreiform children whom the author has seen in the past nine years have been crossed dextrals or have been frankly lefthanded children in whom an attempt has been made to force into full dextrality or a certain amount of it. It is suggested that the deliberate reeducation of these classes to the natural full left-sided dominance may be an important factor in reestablishing nervous balance.

The determination of native handedness and eyedness should be a basic test in all orthopedic procedures concerned with correction of postural defects. Furthermore, native dominance of either side of the body should be recognized as early as possible, and deviation from the inherited relation of eye and hand prevented. (Discussion.)

George H. Stine.

Rosenstein, A. M. **Myopia with arteriosclerosis.** Wien. klin. Woch., 1927, v. 40, Oct., p. 1287.

The author describes five cases ranging between the ages of thirty-nine and sixty-two years. The patients developed a myopia of 1.00 to 3.50 diopters within from two months to one and one-half years. The vision had previously been normal. The blood pressure in one case was 260 mm., in the others cases it ranged between 150 and 185. In all cases typical vessel changes of arteriosclerosis were present. In contrast with diabetes, the myopia of arteriosclerosis develops rather slowly and does not recede, and the myopia seems to be due to a change in the lens refraction and in the lens fibers.

Beulah Cushman.

A. Tschermak. **Functional segmentation and division of the retina.** Zeit. f. Augenh., 1928, v. 66, Sept., p. 35.

The nodocentric system of retinal division (for example the meridians and concentric circles of the perimeter, or Hering's binaxial system of vertical section converging to a vertical line through median nodal point, the horizontal sections converging to a horizontal line through this point) do not conform to observed facts. A checkerboard pattern fixed centrally actually appears concave toward the center, while certain hyperbolic curves appear rectangular.

A number of section systems of the eyeball were projected graphically upon a plane perpendicular to the line of vision and, of the checkerboard patterns which seemed subjectively to be rectangular, that one was selected which was obtained by nodocentric projection of a pupillocentric section system. The author concludes that heterocentricity exists between the perspective center of the dioptric image projection and the center of the entrance pupil—namely 4.4 mm. anterior to the median nodal point and 3.04 mm. from the corneal pole.

A brief abstract can not do justice to this piece of work. Those interested should read the original.

F. H. Haessler.

4. OCULAR MOVEMENTS

Blatt, N. **Paralysis of muscles of eye after spinal anesthesia.** Wien. klin. Woch., 1928, v. 41, July, p. 1048.

The author reports two cases of sixth nerve paralysis occurring after appendectomy under spinal anesthesia. In both cases it came on between eight and ten days after the operation. In one case in which the appendectomy was very difficult, the paralysis was bilateral and was accompanied by miosis and enopthalmos on the right side. This condition persisted for several months. In the uncomplicated appendectomy the paralysis was confined to the right side and cleared up very shortly. The preparations for the anesthesia were the same and both patients were distinctly neuropathic. Blatt recommends that spinal anes-

thesia be used with caution in "nervous" individuals, or used only with proper stimulation.

Beulah Cushman.

Braun, Georg. **The therapy and prognosis of squint.** Graefe's Arch., 1928, v. 120, p. 583.

To insure efficiency of treatment, a case of squint should first be classified according to the sensory condition of the retina into one of three classes. First there is strabismus with preservation of the normal retinal correspondence. The prognosis is usually good in these cases. Mild therapeutic measures commonly lead to correction of the squint, to binocular sight, and, depth perception. In the second group, there is a tendency to fusion of the foveal images, but this tendency is not sufficiently strong to prevent the formation of an anomalous manner of image localization. The final results in this class are that after a long period of observation there is a small degree of binocular vision, color mixing, and fusion of stereoscopic pictures, but no depth perception. In patients belonging to the third class, there is a complete failure of the retinas to function together in a normal manner, and even after operation there occur but rarely signs of normal retinal localization. Where the latter is obtained there is present not the normal correspondence but instead a new deviation of the squinting eye and a new anomalous coordination of the fixing fovea with a new eccentric position of the squinting retina. The anomalous coordination of direction of sight is an adaptation of the sensory relations of the retina to the strabismic position. It can come into existence only upon the basis of the absence of bifoveal fusion, that is, it is due to a deficiency of or want of predisposition to normal retinal correspondence. *H. D. Lamb.*

Dawson, W. S. **Ocular spasms in epidemic encephalitis.** Med. Jour. of Australia, 1927, v. 2, Dec., p. 779.

The author calls attention to the fact that ocular spasms may be complained of before other physical signs have developed, and, especially when emotional reactions are associated, may be mistaken for a functional manifestation. The spasmodic conjugate deviation occurs most frequently in an upward direction, less commonly downwards or sideways. Of sixty-eight cases of postencephalitic parkinsonism, five gave histories of ocular spasm. (Five cases reported.) *George H. Stine.*

Pallestrini, E. **Clinical researches on compensatory oculorotatory nystagmus.** Riv. Oto-Neuro-Oft., 1928, v. 5, March-April, p. 129.

Compensatory nystagmus, the author states, is that nystagmus which takes origin in the healthy labyrinth, and is due to the ampullifugal excitation of this labyrinth when the other is affected. He takes into consideration only cases of traumatic destruction of one labyrinth, and divides the course of these cases into three stages, as follows: (1) the stage of spontaneous nystagmus, which manifests itself on the first day of the trauma and lasts for about twenty days; (2) the stage of unequal postrotatory nystagmus, which lasts four to six months and is still present when the postrotatory movements of the body and the arms have again assumed their normal direction; (3) the stage of the equalized nystagmic movements, which manifest themselves from six to twelve months after the trauma. These movements manifest themselves when the unilateral vestibular deficiency has been compensated for by static and dynamic equilibrium. *M. Lombardo.*

Podestá. E. **Labyrinthine function and oculorotatory crises in patients affected by postencephalitic Parkinson's disease.** Riv. Oto-Neuro-Oft., 1928, v. 5, March-April, p. 166.

In the course of "postencephalitic parkinsonism," oculorotatory crises of a spastic nature may manifest themselves, with or without synchronous

deviation of the head or trunk. It has been noted that oculomotor or the cephalomotor hypertony of one side does not allow the inverse deviation. In the cases presented by the author spontaneous nystagmus was usually present during or between the crises, and on rotation of the trunk the nystagmus manifested itself in the opposite direction. *M. Lombardo.*

5. CONJUNCTIVA

Agnello, Felice. **Monocular diplopia following parenchymatous keratitis.** Riv. Oto-Neur-Oft., 1927, v. 4, March-June, p. 328.

Considering the various theories on the causes of monocular diplopia, the author finds that most of these regard the hysterotraumatic origin as the most probable. Next is the physical and peripheral theory, according to which the most important cause in the production of polyopia is the mechanism of accommodation. The case deserves study and consideration, not only for the importance of the corneal lesion in the production of the diplopia, but also for the interpretation of the phenomenon in question. After excluding all other possible causes, the author considers the diplopia in his case to be due to changes in the corneal substance producing an irregular astigmatism, with multiple images which the cortex is not accustomed to suppress. This theory would imply that with restitutio ad integrum of the corneal structure disappearance of the irregular astigmatism would be accompanied by disappearance of diplopia and polyopia. *D. Alperin.*

Blatt, Nikolaus. **Artificial pannus produced by Helleborus odorus.** Graefe's Arch., 1928, v. 120, p. 742.

While on service in an isolated trachoma station belonging to a military hospital in Bosnia, the author observed the sudden outbreak of trachoma-like follicles and pannus in several individuals. One eye only was affected in each case. The condition was unlike trachoma in that the subjective symptoms were intense pain, photophobia, and blepharospasm. It was discovered that the patients had dropped into their own eyes a dark brown powder obtained from the root of Helleborus odorus.

H. D. Lamb.

Duggan, J. N. **A case of Rhinosporidium Kinealyi.** Brit. Jour. Ophth., Oct., 1928, v. 12, p. 526.

During the last twenty years only a few cases of this condition have been published. A Mohammedan aged fifty-two years presented in the right eye a growth arising from the vicinity of the inner canthus. On examination, a papilloma-like growth covered with a thickened scab was observed protruding through the palpebral fissure. The broad base extended from the internal canthus to a point four or five mm. from the limbus and from 0.5 mm. above the horizontal line to the lower fornix. It was of dark red color and produced no pain. Vision and general eye conditions were normal The removed mass showed no involvement of the sclera. Sections showed a fair amount of fibrous and fibrocellular tissue (granulation tissue rich in plasma cells), and typical cysts of rhinosporidium. The cysts were situated in the subepithelial layer and were irregular in size, shape, and distribution according to the different stages of growth. Some contained granular material, while others were quite empty. (Four photomicrographs.)

D. F. Harbridge.

Lauterstein, M. **The usefulness of tracumen in ophthalmology.** Zeit. f. Augenh., 1928, v. 66, Sept., p. 79.

Tracumen is copper trichlorbutylmalic acid and is used as a ten per cent ointment. Other investigators have claimed that it is as effective as copper sulphate in one-half the cases and better than copper sulphate in the remainder. The present author finds that it is not so active as copper sul-

phate, but that when combined with usual mechanical measures it is satisfactory for conjunctival lesions and causes no pain. It cannot be used alone except as an after treatment.

Lauterstein further finds that tracumen combined with athropin and hot compresses causes corneal ulcers to heal, but not so rapidly as when older therapeutic measures are applied. However, the ulcers did heal, and in no case did the ulcer become worse after use of the remedy. In seventy children with severe eczematous lesions five per cent tracumen ointment was less satisfactory than mercury ointments. *F. H. Haessler.*

Masennikoff, A. J. **Autohemotherapy in trachoma.** Russkii Opht. Jour., 1928, Aug., pp. 191-197.

The following technique of autohemotherapy was used in the treatment of sixty-three trachoma cases: 5 to 15 cm. of blood obtained from the brachial vein of the patient was immediately injected under the skin of the abdomen. As a rule, ten injections were given at intervals of from forty-eight to sixty-four hours. There were no ill effects, with the exception of a slight rise in temperature in some cases. The improvement of the eye condition, particularly of corneal infiltrations and ulcerations, was remarkable even in cases where no local treatment was administered. The method does not prevent recurrence, and the importance of energetic local treatments during the following autohemotherapy is stressed.

M. Beigelman.

Mossman, Paul D. **Trachoma in the state's health program.** Southern Med. Jour., 1928, v. 21, Oct., p. 865.

A résumé of the efficacious trachoma preventive work in the southern states, the paper deals especially with the effective work of trachoma hospitals in the more heavily infected districts of Kentucky, Tennessee, Arkansas, and Missouri. (Discussion.)

R. W. Danielson.

Nichelatti, P. **Infrared irradiation in the treatment of conjunctival affections, especially trachoma.** Ann. di Ottal., 1928; v. 56, April, pp. 316-322.

The author became interested in this subject through having seen two cases of spontaneous cure of trachoma in furnace tenders. He discusses the effects of light of different wave lengths.

Hot packs applied to the lids cannot raise the temperature of the conjunctiva above 43° C. and usually not above 39° C. so that they can have no bactericidal effect. The author used the Paquelin cautery with a large knife-shaped point which was held one-half centimeter from the conjunctiva for three minutes, removing it occasionally when pain was complained of. The temperature of the sac increased to 45° or 46° C. in two minutes, and that of the conjunctiva to about 60° C. From such temperature an inhibiting effect on bacteria may be expected, and also hyperemia and exudation of serum into the tissues.

Of eighty cases of trachoma so treated eighteen with complete records are reported. After fifteen to twenty daily treatments most cases were clinically cured, and several seen after two or three years have remained without recurrence. A minimum of scarring was produced, even in the markedly hypertropic cases, and those with corneal ulceration did well under this treatment. One case of vernal catarrh which had resisted other forms of treatment was much improved. (Bibliography.) *S. R. Gifford.*

Towbin, B. G., and Okunew, D. F. **The question of eosinophilia in trachoma and the mechanism of its formation.** Graefe's Arch., 1928, v. 120, p. 745.

In blood examinations on twenty-six patients with trachoma, eosinophilia of the blood was found in a considerable number. In the blood of the eyelid the eosinophilia was considerably greater than the general eosinophilia, sometimes reaching ten per cent. In the

overwhelming majority of trachomatous patients, a lymphocytosis to sometimes forty-seven per cent was found. In almost all cases, the number of erythrocytes in the blood of the eyelid was less than that in blood from the fingertip. It is evident that the eosinophilia is produced as a reaction to the toxins of trachoma. After massage of the lid, both the general eosinophilia and that in the eyelid was increased. After a course of treatment, both kinds of eosinophilia were diminished.

H. D. Lamb.

6. CORNEA AND SCLERA

Benedict, W. L. **Removal of multiple foreign bodies in the cornea.** Proc. of Staff Meetings of the Mayo Clinic, 1928, v. 3, Sept. 12, p. 269.

A man aged thirty-two years was injured Feb. 6, 1928, by explosion of a gasoline still. The right eye was destroyed. The left cornea and conjunctiva received a large number of fine particles of metal. Seven months later the visible bulbar conjunctiva was practically black, and many of the small metallic particles protruded through the anterior surface of the cornea. The lens and iris were normal. A quadrilateral section of the cornea, taking all but a narrow zone above and below, was resected down to Descemet's membrane, thus removing all the foreign bodies. The epithelium covered the cornea within ten days. Two months later the cornea was slightly hazy in the central portion, with vision 6/30 without correction.

R. W. Danielson.

Burnham, G. H. **Remarks regarding the discussion upon the etiology and treatment of hypopyon ulcer.** Brit. Jour. Ophth., 1928, v. 12, Oct., p. 522.

This clinician's method of treating hypopyon ulcer consists of first freely dropping into the eye a solution of argyrol 20 grains to one dram, and also a few drops of atropin. After this preliminary course his chief reliance is in a series of twenty hypodermic injections of pilocarpin, one every day, beginning with one-twelfth grain, gradually increased to one-fourth grain and in some cases to one-third grain. During the series mercury is given twice daily a half-hour after eating, and the iodide and bromide of soda twice daily one hour after eating. However, between series the medicines are given thrice daily.

The author feels that this treatment occupies an almost unique position in regard to its power of healing in this disease.

D. F. Harbridge.

Cucchia, A. **The corneal curvature in the human fetus.** Arch. di. Ottal., 1928, v. 56, June, pp. 504-509.

The author measured the corneal curvature of fetuses from three and one-half to nine months old, using molds made in soft plaster for his measurements. The decrease in curvature was parallel to the increase in the size of the cornea up to the seventh month, while between seven and nine months the increase in size is proportionately greater. The radius of curvature in the horizontal meridian in the ninth month is 7.5 mm., which agrees closely with Axenfeld's figures as obtained with the ophthalmometer. (Bibliography.)

S. R. Gifford.

Fischer, Franz. **Intrascleral loops of ciliary nerves.** Zeit. f. Augenh., 1928, v. 66, Sept., p. 59.

After a brief review of the literature the author describes the histological details of forty intrascleral ciliary nerve loops in thirty eyes. It is not an uncommon finding, and loops can be found in any part of the eyeball. The sclera is never completely perforated, and in none of his cases did the author find a typical neurinoma or neurofibrosis. Critical inspection of a series of perforations of embryonic eyes disclosed ciliary nerves in the anterior segment of the fetal eye at a time when scleral tissue was still absent or at most very rudimentary.

F. H. Haessler.

Fuchs, E. **Anatomical findings after tattooing with India ink.** Graefe's Arch, 1928, v. 120, p. 714.

There are reported the anatomical findings in eleven human corneas in which tattooing had been performed from one to thirteen years before enucleation. The anterior epithelium of the cornea was normal or but little changed. The ink deposited by the needle in the deeper corneal layers subsequently wandered to the superficial layers. In the parenchyma of the cornea or in the cicatrix, the ink for the most part lay free and was not enclosed in cells. Free particles of ink were carried by the lymph stream to the corneal corpuscles and to the fibroblasts. There they probably became adherent to the superficial surface of these cells. The ink also lay in the loose tissue between the blood vessels and the firm scar tissue and in the vessel wall itself. In only one of the author's cases, all of which were old, was it evident that the ink was taken up and removed by wandering cells, probably lymphocytes. *H. D. Lamb.*

Lauterstein, M. **The usefulness of tracumen in ophthalmology.** Zeit. f. Augenh., 1928, v. 66, Sept., p. 79. (See Section 5, Conjunctiva.)

Saba. V. **The sclerotrabecular insertion of Brücke's muscle.** Arch. di Ottal., 1928, v. 56, June, pp. 519-524.

The author finds three types of insertion, depending on the degree of development of the scleral spur. Where this is well developed, the muscle is inserted entirely in it. In eyes with a poorly developed scleral spur, the insertion is entirely in the corneoscleral trabecula, forming the posterior wall of Schlemm's canal. The most common type is an insertion on both these tissues. (Bibliography and three figures.)
S. R. Gifford.

Shiraishi, Kensaku. **Influence of crushing and extirpation of the ciliary ganglion upon the cornea of the opposite eye.** Graefe's Arch., 1928, v. 120, p. 576.

Crushing of the ciliary ganglion in dogs causes opacity and formation of corneal ulcer on the nonoperated side after fourteen to fifty days. Extirpation of the ciliary ganglion only rarely produces the same effect. Extirpation of the cervical sympathetic never leads to similar changes. *H. D. Lamb.*

7. UVEAL TRACT, SYMPATHETIC DISEASE AND AQUEOUS HUMOR

Koppanyi, Theodore. **Comparative studies on pupillary reaction in tetrapods. IV. The mode of action of pilocarpin on the pupil of the rat.** Jour. of Pharmacol. and Exper. Ther., 1928, v. 24, Sept., p. 73.

Waddell (1926) and Koppanyi and Sun (1926) are quoted as having shown that pilocarpin hydrochloride administered locally or systemically invariably produced dilatation of the pupil in the normal eye of the rat. Koppanyi and Sun have further shown that after denervation of the iris pilocarpin contracts the pupil. From many experiments the author concludes that dilatation is caused by incomplete paralysis of the parasympathetic myoneural junction. *R. W. Danielson.*

Lutz, Anton. **Twenty-four cases of physiological depigmentation of both irides and thirty-two cases of heterochromia iridum.** Graefe's Arch., 1928, v. 120, p. 653.

After a study of this problem of about twenty years duration and the observation of eighty-seven cases, the author thinks that heterochromia iridum is always conditional upon unilateral inheritance. It may be simply inherited, it may be produced by unilateral inhibition of pigment formation or by subsequent depigmentation on one side. *H. D. Lamb.*

Murad-Chan, Ali Bei. **Persistent pupillary membrane adherent to the cornea, stimulating a cilium in the anterior chamber.** Zeit. f. Augenh., 1928, v. 65, Aug., p. 346.

The title tells all that is contained in the brief description of this chance observation. *F. H. Haessler.*

Uminissa, C. Mussa-Beili. **A case of numerical iris.** Zeit. f. Augenh., 1928, v. 65, Aug., p. 344.

A partial coloboma, or an aplasia of the mesodermal layer of the iris in limited areas, gave the appearance of arabic numerals. The author quotes from the literature a case in which the numbers 10 and 45 were said to be clearly legible to any unbiased observer. In his own case the illustrations reveal rather irregularily outlined radial clefts. *F. H. Haessler.*

Scalzitti. **The behavior of the pupil at the beginning and end of atropine mydriasis.** Ann. di Ottal., 1928, v. 56, Apr., pp. 300-315.

The author records careful observations on a large series of atropinized and homatropinized patients. The time before mydriasis commenced varied from six to sixteen minutes. It was not appreciably shortened in those patients kept in the dark and bandaged. It was lengthened ten to twenty minutes in eyes with congestion from the removal of a foreign body. Age and the presence of cataracts had no influence. The time was the same with one per cent atropine and homatropine. In most cases one sector was affected first and showed the greatest effect throughout the time of mydriasis. This apparently depends on an irregular distribution of nerves to the iris. (Bibliography.) *S. R. Gifford.*

8. GLAUCOMA AND OCULAR TENSION

Böhm, Junior. **An acute attack of glaucoma after instillation of glaucosan.** Graefe's Arch., 1928, v. 120, p. 574.

In a forty-three year old man with bilateral glaucoma, drops of levoglaucosan were used in each eye after an unsuccessful two weeks treatment with miotics. An acute attack of glaucoma developed in a few hours and the vision sank to recognition of motion of the hand close to the eyes. An iridectomy was performed in each eye five days after the glaucosan drops were used. The author states that in the future he will begin the use of glaucosan only in the poorer eye and then only when operation is contraindicated.

H. D. Lamb.

Redslob, E., and Reiss, P. **Studies on swelling of the vitreous.** Ann. d'Ocul., 1928, v. 165, Sept., pp. 641-667.

From extensive studies on enucleated eyes of oxen the authors conclude that the slightest variation of the (pH) hydrogen-ion concentration is accompanied by marked variation of the volumetric contents, causing a considerable modification of ocular tension. Alkalinization is associated with increased tension and acidification with diminished tension.

In the eye from a human cadaver 0.11 c.c. of water brought tension to normal as measured with the Schiøtz tonometer and only 0.02 c.c. more was necessary to increase the tension to sixty mm. Inasmuch as an almost imperceptible change of the hydrogen-ion concentration produces a much greater change in volume than 0.02 c.c., it is easily understood how this changed pH might easily have been overlooked.

L. T. Post.

9. CRYSTALLINE LENS

Giannantoni, A. **Researches on the blood chemistry of cataractous patients; creatin and creatinin.** Ann. di Ottal., 1928, v. 56, Apr., pp. 916-925.

This is a continuation of previous work by the author which indicated decreased renal function, slightly increased total nitrogen in the blood, and slightly decreased urea in the urine of cataractous patients, as compared with normal persons of the same age period. He now reports the blood creatin and creatinin in a similar series of patients.

In nine normal persons, the average

creatin was 11.28 mg., and the average creatin was 63.25 mg. per liter, while in ten cataractous patients the averages were 13.74 mg. and 70.83 mg. These results are what would be expected from the previous figures for renal function and total nitrogen, and indicate a retention of these substances in the blood of cataractous patients.

S. R. Gifford.

Kleefeld, G. **Biomicroscopy of the crystalline lens.** Bull. Soc. Belge d'Opht., no. 56, May 6, 1928, p. 9.

There are lens opacities in practically all cases. Vogt has demonstrated that the lesions observed at different depths of the lens are characteristic of different periods of life. With dilated pupils about twenty-five per cent of adults show at the periphery of the lens significant opacities lying at the level of the equatoral region and adjoining that zone of discontinuity which Vogt calls the adult nucleus. These are the forms of opacity which lead to a false diagnosis of incipient or senile cataract. This "coronary cataract" develops very slowly: the equatoral region is saturated with dust-like opacities which slowly or never reach the pupillary region. Three illustrative cases are reported by the author, with a detailed description of the appearance of the lens under the microscope. *J. B. Thomas.*

Komura, K. **Secretory disturbance of the ciliary body in naphthalin cataract.** Graefe's Arch., 1928, v. 120, p. 766.

Naphthalin produces in rabbits a secretory disturbance of the ciliary body which may be followed by diminution of intraocular tension from 22-25 mm. to 9-7 mm. Hg within ten days. After paracentesis, the content of albumen of the second aqueous humor shows no or very little increase. The author thinks the secretory disturbance of the ciliary body may cause the cataract. *H. D. Lamb.*

Lenhard, Oscar. **Regeneration of the lens in deficiency of the thyroid gland.** Graefe's Arch., 1928, v. 120, p. 496.

In experiments on full-grown Triton cristatus, in three of the twenty-two eyes studied over a period from three to twenty-six days after the extirpation of the thyroid gland, there was noted a considerable slowing up in the regeneration of the excised lens.

H. D. Lamb.

Paton, Leslie. **Conjunctival bridge in cataract extraction.** Brit. Jour. Ophth., 1928, v. 12, Oct., p. 525.

This operator finds a definite advantage in a conjunctival bridge, which he has modified from the usual procedure. Instead of straight up he makes an oblique bridge. As soon as the scleral cut is completed, the handle of the Graefe knife is depressed, thus cutting obliquely up and out, so that the terminal bridge, about two mm. in breadth, lies level with or just outside the outer margin of the cornea. This leaves no impediment to doing an ordinary upward iridectomy, nor to the straight forward delivery of the lens, and yet the bridge acts quite efficiently in keeping the lips of the wound from gaping and in keeping the conjunctival flap in good position. (One illustration.) *D. F. Harbridge.*

10. RETINA AND VITREOUS

Amsler, M., and Dubois, H. **Topography of detachment of the retina.** Ann. d'Ocul., 1928, v. 165, Sept., pp. 667-675.

By means of concentric circles of different radii and meridional lines, the authors have constructed charts by using which it is possible to indicate the location of any part of the detachment, so as to determine the point of entry for the electric cautery where this is to be applied to a retinal tear.

L. T. Post.

Bergmeister, R. **Surgical treatment of detachment of the retina.** Wien. klin. Woch., 1927, v. 40, Feb., p. 225.

The author treated a case of detachment of the retina of a month's duration in the following manner: a conjunctival flap was dissected to the cornea as a base, and over the area of detachment a meridional incision was made and vertical to this a transverse incision. The conjunctiva was drawn over, and a cystoid scar was formed as the fluid trickled through. The retina remained completely attached during seven months observation. Some of the good result may have been due to the added use of foreign protein treatment. *Beulah Cushman.*

Birnbacher, T. **Spring peak of epidemic avitaminotic hemeralopia, and pathogenic significance of spring.** Wien. klin. Woch., 1928, v. 41, May, p. 698.

The author believes that the physiologic changes in the spring associated with climatic and meteorologic factors are responsible for the spring peaks of hemeralopia, keratomalacia, and tetany, rather than the seasonal dietetic defects. *Beulah Cushman.*

Cucchia, A. **Researches on the central and peripheral light sense in diseases of the optic nerve.** Ann. di Ottal., 1928, v. 56, May, pp. 385-402.

The work of Lo Cascio, who investigated the peripheral retinal zones with Nagel's adaptometer, is quoted. He found a zone of maximum light sensitivity twenty or thirty degrees above the fovea. Peripheral to forty or fifty degrees the light sensitivity decreases rapidly. To Lo Cascio's simplified adaptometer the author added an arrangement of horizontal and vertical perimetric arcs giving eight fixed points for the adaptometer. Tests were made after thirty minutes of dark adaptation. Findings with this apparatus in eleven normal persons confirmed those of Lo Cascio as regards the various areas of retinal sensitivity. Twenty-two cases, chiefly of optic neuritis, were also examined. In conditions where central vision had been much reduced for some time, central and peripheral light sense was reduced. In a number, however, with rather poor central vision, and in amblyopic eyes with strabismus, the light sense was well preserved. In fresh cases in which a favorable outcome was later observed, the light sense remained normal, even when central vision was reduced to one-tenth or less. The relative sensitivity of the various retinal zones was always preserved.

S. R. Gifford.

Dickson, Cyril, and Mitchell, J. C. **Report of a series of cases of retinitis pigmentosa occurring in one family.** Med. Jour. Australia, supplement, 1927, v. 2, Dec., p. 462.

In the family under observation, two (and almost certainly three) males were affected and one female. The age or position in the family did not seem to be a determining factor. The father had been deaf since the age of twenty-nine years, but no eye defect was found. He had two deaf and dumb cousins, but his brothers and sisters and their children were stated to be normal. The mother was normal and her family history was negative. It is not reported that the father and mother were consanguineous. Typical end-organ deafness was present in each of the four cases. The blood Wassermann was negative throughout. (Discussion.) *George H. Stine.*

Fuchs, E. **Retinal changes after softening of the eye.** Graefe's Arch., 1928, v. 120, p. 694.

After perforation of the eyeball either through injury or ulcer, there is frequently found one of two kinds of change in the retina. In the mild and recent cases, there is in spots a disappearance of the neuroepithelium, while in the severe and old cases there occurs a degeneration of the entire retina, usually with immigration of pigment.

The latter development is known as a gliosis. In normal eyes the retina usually folds after death or enucleation in two places, at the ora serrata in children's eyes and at the fovea centralis in adults. The next more important location for large folds is in the immediate vicinity of the papilla. The retinal folds are rarely so large in adults as in children.

Intravital retinal folds or those occurring at death or enucleation have a small interspace between choroid and retina at the base of each fold, filled with a homogeneous coagulum. In the postmortem folds, this space is empty. Postmortem folds usually involve the entire thickness of the retina, intravital chiefly the outer retinal layers. Both the intravital and the postmortem folds are due to a disproportion between the area of the choroid and of the retina. At the instant of death or of enucleation the choroid shrinks as a result of the sudden and considerable diminution of blood pressure in its vessels. In the majority of cases with fresh intravital folds these disappear with the restoration of normal ocular pressure, but there persists a permanent disturbance of function at the site of the fold.

The disappearance in spots of the neuroepithelium is caused by a fine tearing in the outer nuclear layer of the retina. These tears can be the result of retinal foldings, but they occur more frequently without them. In old cases of corneal staphyloma and of perforating injury, the frequently accompanying retinal degeneration (gliosis) follows the primary destruction of the neuroepithelium. *H. D. Lamb.*

Jaensch, P. A. **Amaurosis produced by embolus of the internal carotid and of the ophthalmic artery.** Graefe's Arch., 1928, v. 120, p. 759.

In a twenty-four year old laborer there occurred a sudden amaurosis in the right eye, with the typical ophthalmoscopic picture of embolus of the central artery. Examination after death one month later established fresh lung infarcts, endocarditis, and small thrombi in the veins of the genital apparatus, but no arteriosclerosis. An embolus was present in the right internal carotid artery where it entered the dura. The beginning of the ophthalmic artery was filled with a similar coagulated mass. *H. D. Lamb.*

Meller, J., and Marburg, O. **The nature of so-called Czermak-Hippel retinal disease.** Zeit. f. Augenh., 1928, v. 66, Sept., p. 1.

Since Meller in 1913 published his opinion that this disease was a diffuse teleangiectatic, retinal gliosis, rather than, as is more commonly accepted, an angioma, a formidable literature has accumulated. Meller and Marburg have now come into possession of another eyeball with typical clinical manifestations of the disease, and have carefully studied it in collaboration with a neuropathologist. The histological picture in this case was characterized by numerous small masses distributed through the retina, and no connection with the main mass was demonstrable. This does not of course prove that the satellites did not in some way originate from the larger lesion. But that type of growth is not characteristic of angioma.

Though several authors have emphasized that the multiple appearance of angioma is not uncommon, this is certainly not characteristic in the eye. No case of multiple angioma of the choroid has yet been reported. The retinal lesion is overwhelmingly commoner than angioma of the choroid. In other parts of the body angioma is usually congenital, whereas the retinal lesion always begins later in life.

Histological study of the tiny masses is of particular importance, because the characteristics of the lesions are clearly seen here. Against the diagnosis of angioma is the fact that many lesions can be found consisting purely of proliferated cells without vessels. If the tumor were an angioma one would ex-

pect the earliest stage of its development to be represented by proliferated vessels. The occurrence of incipient tumors as circumscribed solid masses, partly in areas of the retina where this tissue, despite the destruction of nervous elements by accumulated transudate, has not responded with glial proliferation, partly in uninjured areas, shows that it is wrong to assume that the glial proliferation is a secondary manifestation.

It is also wrong to conclude that the lesion is angiomatous, because the red masses are the first findings to be noted ophthalmoscopically as the disease develops. It is entirely possible that glial proliferation has existed for some time though ophthalmoscopically invisible.

The authors emphasize the importance of the case reported by Knape in 1908, which seems to them to represent a transition from pure typical glioma of the retina to Czermak-Hippel disease. While other authors have ignored it and have stated it to be unimportant, the findings do not fit in well with the view that the retinal disease is angioma. Scheel has pointed out that retinal glioma beginning late in life is always more vascular than that beginning early, and Wintersteiner's monograph on retinal glioma reproduces a picture of an "angioma" in an otherwise typical glioma.

F. H. Haessler.

Scotti, P. **Family amaurotic idiocy.** Ann. di Ottal., 1928, v. 56, Apr., pp. 333-353.

Two cases are reported. The first was in a girl eight months old, whose parents were Italians and first cousins. At four months, the baby showed irregular wandering movements of the eyes, with signs of mental and muscular degeneration, and the cranium became abnormally large. The nerves were atrophic and the characteristic white plaque with central red spot was present in both macular regions. The Wassermann was negative, and a brother three years old was apparently normal.

The second patient was a girl one year old whose parents were Jewish and not related. Ocular examination showed a condition almost exactly similar to that seen in the first case.

The literature is carefully reviewed, with respect to the clinical picture, morbid anatomy, and pathogenesis. The author's case is one of a few in which races other than the Jewish have been affected. *S. R. Gifford.*

11. OPTIC NERVE AND TOXIC AMBLYOPIAS

Carmi, A., and Pietrantoni, L. **Contribution to the study of retrobulbar neuritis in connection with congestive disturbances of the nasoorbital region.** Riv. Oto-Neuro-Oft., 1928., v. 5, Mar.-Apr., p. 101.

In order to clear up some obscure points, the authors made systematic researches from the clinical, pharmacologic, and anatomic standpoints.

In their clinical researches they considered a class of patients who were affected by some eye disease and showed also symptoms of acute and chronic sinusitis, or were affected by nasal polypi, hypertropic tonsils or adenoids, and other diseases. Following treatment of the nasal conditions an improvement or disappearance of the eye disturbances was noted; with improvement of visual power, enlargement of the visual fields, and decongestion of conjunctiva and optic nerve.

The pharmacologic researches were made in order to establish the effect of some drugs on normal and pathologic eyes by way of nasal medication. After medication of one nasal cavity in normal subjects with a solution of cocaine-adrenalin, mydriasis of the eye of the same side became manifest, very seldom mydriasis of the other eye. The dilatation started fifteen to twenty minutes after the medication and lasted from one to one and one-half hours. From twenty to thirty minutes after the medication the conjunctiva became pale, and the formation of a whitish halo around the disc became manifest, together with paleness of the rest of

the retina and contraction of the retinal blood vessels. After medication with adrenalin alone the retina was found pale but no mydriasis was noted, or just a slight mydriasis in a few cases. Repeating these procedures in patients, the same results were obtained. The authors state then that the drugs acted on the eyeball through the lymphatic and blood vessel connections, emphasizing the principle that "the vascular factor" is important in determining the pathogenesis of ocular disturbances with affections of the nose and sinuses. As to anatomic researches, the authors studied serial sections of the nasoorbital region of fetuses which had been injected with India ink through the jugular and superior cava veins. They found direct connections between the vascular system of the nasal cavity and that of the anterior and posterior sections of the orbit. These connections, never described before, are formed by groups of blood vessels which, through the bony lateral walls of the nasal cavities, unite directly the vascular network of the nasal mucous membrane with the network adjacent to the nasal side of the orbit. They found also that the blood vessels of the sheath of the optic nerve were connected by anastomosis with the vascular network of the optic nerve arising from the central artery of the retina, and also with the rich vascular network of the orbital fat. The vascular relations between the posterior segment of the nasal cavities and the pharynx on one hand and the structures of the posterior segment of the orbit are known.

From these anatomic data, together with the result of the pharmacologic researches, the authors explain those obtained by the clinical researches which indicate that inflammatory processes of the nose and sinuses are communicated to the structures of the orbit by their vascular connections.

M. Lombardo.

De Vincentiis, G. **Some considerations on the importance of the toxic factor nicotine in the genesis of so-called tobacco-alcohol amblyopia.** Riv. Oto-Neuro-Oft., 1927, v. 4, Mar.-June, p. 281.

After examining populations in tobacco-growing districts, he concludes that tobacco is the predominating factor in producing the disease, through the toxic action of tobacco upon the optic fibers. *D. Alperin.*

Esch, A. **Operation for retrobulbar neuritis of nasal origin.** Klin. Woch., 1928, v. 7, May, p. 938.

Five cases of recent retrobulbar neuritis are reported in which optic atrophy was not yet demonstrable. Clinically the accessory sinuses were negative, but due to the rapid progress the ethmoids and sphenoids were cleaned out. The vision in all cases returned to normal very promptly. Two other cases were too recent for report. Out of thirteen cases, the mucous membrane of the sinuses was normal in five, pathologic in six, although diseased sinuses had been diagnosed in only two of the cases.

Beulah Cushman.

Hosford, G. N. **Arsenical optic neuritis, with special reference to syphilis.** California and Western Med., 1927, v. 27, Dec., p. 797.

The literature review presents evidence derived from clinical and experimental studies, referring especially to arsphenamin and neoarsphenamin. One case is reported. A man who showed an old disseminated choroiditis, and who had been refracted two months before, returned with a history of blurring of vision coming on rather suddenly. In this two-month interval he had acquired a chancre, and treatment was immediately instituted. He had received four doses of neosalvarsan and daily mercurial inunctions. Fundus examination showed optic neuritis and descemetitis in each eye. Neoarsphenamin was discontinued, and after two weeks improvement was noted. Within six weeks all signs of optic neuritis had disappeared.

It is suggested that a variability of the minimum lethal dose of neoarsphenamin as made by different companies may be a clue as to why some patients develop optic tract lesions from neoarsphenamin and why the great majority do not. The author concludes that the present state of our knowledge warrants cautious procedure in the use of arsenicals in optic tract lesions of lues. (Discussion.)

George H. Stine.

Mauksch, H. **Attempts to treat tabetic optic atrophy clinologically.** Zeit. f. Augenh., 1928, v. 65, Aug., p. 336.

The author believes that Behr has shown that the essential factor in the production of tabetic optic atrophy is a change in the glia which induces a destruction of the capillaries and lymph vessels of the optic nerve upon which atrophy of the nerve follows. By opening the ethmoid cells an area is injured which cannot heal except by granulation, and this brings about a hyperemia of the part which must also involve the optic nerve because of its proximity.

Furthermore, adrenalin tampons can be placed in the opening from time to time so that an overfilling of the regional capillaries will follow the temporary anemia produced by the adrenalin. The hyperemia in itself is desired, but a meningeal irritation is also produced, which brings about a permeability of the meninges to antibodies which cannot pass through the normal meninges.

Five cases observed for a short time are reported because the observations seem so promising to the author that he urges a trial of his method by others. *F. H. Haessler.*

Mezzatesta, Francesco. **On the interpretation of some so-called retrobulbar neuritides.** (Amblyopia alcoholica) Riv. Oto-Neuro-Oft., 1927, v. 4, Mar.-June, p. 258.

In this preliminary report the author claims that alcoholic amblyopia is due to intracranial hypertension, as the entire symptomatology of this disease is explained by this assumption, and furthermore than entire subjective symptomatology such as vision and visual fields becomes normal after one or more lumbar punctures. He uses potassium bromide, and explains the action of this drug upon the cerebral cortex. It diminishes the reflex irritability of the cortex, reduces the number of heart beats, and lowers blood pressure. The K-ion acts upon the cardiovascular while the Brion acts upon the nervous system. *D. Alperin.*

Tessier, G. **Physiologic excavation of the papilla in relation to static refraction.** Arch. di Ottal., 1928, v. 56, June, pp. 525-534.

The author examined 1,500 patients for the presence and extent of physiologic cupping, choosing equal numbers showing the chief refractive errors, including all types of anisometropia. In cases showing isometropia he found excavation in fifty-two per cent of emmetropic, forty-six per cent of hyperopic, and forty-four per cent of myopic eyes. In the anisometropic cases, however, the relations were different, the hyperopic eyes showing the greatest number of excavations and the emmetropic the least. This indicates that the occurrence of the physiologic cupping is independent of the refraction. Excavation was present in forty-five per cent of all the eyes examined. (Bibliography.) *S. R. Gifford.*

Winkler, L. **Sulphur treatment of optic atrophy.** Wien. klin. Woch., 1928, v. 41, Mar., p. 374.

The author treated five cases of tabetic optic atrophy with 0.5 and one per cent sulphur emulsions in olive oil, administered parenterally. The patients were given two bismuth injections, and thereafter injections of sulphur and bismuth at the same time, twice a week. The initial dose was 0.2 c.c. of the 0.5 per cent suspension,

and the dose was gradually increased to three c.c. The reactions were kept mild, so that the temperature never exceeded 39.5° Centigrade. Improvement lasting (to date) eighteen, eight, and five months was obtained in three cases. In the two other patients the condition remained stationary.

Beulah Cushman.

12. VISUAL TRACTS AND CENTERS

Baker, M. C. **Pituitary tumor with eye symptoms. History of case with operation.** Kentucky Med. Jour., 1928, v. 26, Aug., p. 399.

In April, 1924, a young lady of twenty years who had never menstruated began complaining of marked gain in weight, severe pain over the left eye, and symptoms referable to complete involvement of left oculomotor nerve. Examination confirmed the oculomotor paralysis. Vision of each eye 20/20; fields, fundi, and refraction normal. During the next two years the symptoms abated somewhat under various medication. In February, 1927, the left eye had vision of 20/30, downward and inward restriction of field, and pallor of the optic nerve. In July, 1927, two roentgen-ray examinations of the skull, especially of the sellæ, were negative. By March, 1928, the above symptoms were much aggravated and a diagnosis of pituitary tumor was made, the roentgen-ray findings now being positive. Immediate operation by the transphenoidal route confirmed the diagnosis, and resulted in early relief from at least most of the symptoms. (Discussion by consultants.)

R. W. Danielson.

Berneud, G. **Traumatic maximal miosis.** Zeit. f. Augenh., 1928, v. 65, Aug., p. 329.

In two cases unilateral maximal miosis followed trauma to the head. Light did not cause further contraction, and accommodative effort did not produce any further contraction of the pupil observable with the low power of the corneal microscope. Long continued effort to accommodate produced a very slight contraction, observable only with higher microscopic magnification. The contracted pupil reacted normally. The condition remained unchanged for years, and there were no other manifestations which suggested the seat of the lesion.

F. H. Haessler.

Evans, John N. **Notes on scintillating scotomata of dietetic origin.** Long Island Med. Jour., 1928, v. 22, Sept., p. 527.

A complete report (with three drawings) is given of one case of scintillating scotoma due to the ingestion of relatively large amounts of cranberry jelly. Four other brief reports are given of cases due to rhubarb, grapes, apples and oranges, and oranges, respectively. Mention is made of eight other cases associated with the use of orange juice. Evans suggests that the diet is probably only one of several etiological factors in this disorder, but believes interdiction of fruits is indicated.

R. W. Danielson.

Luppino. **Contribution to the study of the sixth nerve nucleus.** Ann. di Ottal., 1928, v. 56, May, p. 420-422.

The author studied this region in fetuses of nine months by Cajal's method. He confirmed the direct connections of the nucleus with the posterior longitudinal bundle and the substantia reticulata. (Bibliography.)

S. R. Gifford.

Mezzatesta, Francesco. **Facial hemiatrophy with visual disturbances.** Riv. Oto-Neuro-Oft., 1927, v. 4, March-June, p., 315.

The author gives histories and illustrations of a few cases of facial hemiatrophy. He attributes these to cranial inflammation due to prenatal or postnatal serous meningitis, predicated upon a lesion of the cervical sympathetic, and ending with trophic alterations of the soft parts and with visual disturbances. The four cases showed

a positive Horner syndrome. Lues and rachitis are given as prevalent causes of facial hemiatrophy.

D. Alperin.

Sabbadini, Dario. **Paralysis of the right externus after rachistovainization.** Riv. Oto-Neuro-Oft., 1927, v. 4, March-June, p. 305.

The author considers the paralysis as a premonitory symptom of a latent endocranial affection, precipitated by removal of some of the cephalorachidian fluid at the time of spinal puncture. A case with meningeal irritation following rachianesthesia with stovaine is mentioned. With paralysis of the external musles occurred mydriasis, cephalalgia, vertigo, dysarthria, amblyopia, vomiting. The symptoms were cured by repeated lumbar puncture. The author concludes that small amounts of fluid should be removed, as the secondary hypertension (measured by the rachimanometer of Claude) is in direct proportion to the amount of fluid removed.

D. Alperin.

Seguini, Arminio. **Binasal hemianopsia in luetic affection of the base.** Riv. Oto-Neuro-Oft., 1927, v. 4, March-June, p. 299.

The author presents these cases because of a peculiar and rare coincidence of binasal hemianopsia and luetic infection. One has to assume that the process at the base of the skull compresses and simultaneously involves the noncrossed fibers of the optic nerves occupying the external bitemporal side of the chiasm. The author explains his three cases of binasal hemianopsia as follows: Case one he attributes to an inflammatory process at the base of the skull involving the chiasm. The second case suggests a process of compression, therapeutic diagnosis pointing to lues. The third, a case of tabetic atrophy, is very interesting, because binasal hemianopsia has never been reported in this disease.

D. Alperin.

13. EYEBALL AND ORBIT

Handmann. **Serous cysts of the orbit originating in displaced nasal mucosa.** Zeit. f. Augenh., 1928, v. 65, Aug., p. 322.

A report of a hazel-nut-sized mass between the eyebrow and upper lid which proved to be a cyst lined with cuboid and columnar epithelial cells. In consideration of the histological picture which is described at length and the findings of five authors in the literature, he concludes that his cyst was probably nasal in origin.

F. H. Haessler.

James, R. R. **A case of brawny tenonitis.** Brit. Jour. Ophth., 1928, v. 12, Oct., p. 524.

The patient was a woman aged forty-eight years, whose right eye had been first inflamed four years previously while more recently the left eye had become affected. The right bulbar conjunctiva presented a peculiar salmon-colored tint, together with a semisolid chemosis. In the left eye the process was in an earlier stage, and there was a uniform redness at the equator of the eye in its upper part, while the anterior parts of the eye were normal. Thus the condition was a tenonitis and not a scleritis. (One illustration.)

D. F. Harbridge.

Marinoschi, A. **Ocular changes in Mongolian idiocy.** Ann. di Ottal., 1928, v. 56, Sept., pp. 836-847.

The author examined six cases of so-called Mongolian idiocy. All showed the characteristic epicanthus and all had some degree of convergent strabismus. Three showed oscillating nystagmus, four were myopic (only one as much as nine diopters), and all showed considerable depigmentation of the fundus, especially at the posterior pole. The author believes that the myopia and fundus changes are due to poor development of connective tissue, especially that of the sclera. He did not note in his cases the occurrence of any lens changes

such as had been described by Koby and van der Scheer.

S. R. Gifford.

Menestrina, Gino, **Pulsating exophthalmus (complicated with phenomena of intense orbital edema) spontaneously cured.** Riv. Oto-Neuro-Oft., 1927, v. 4, March-June, p. 285.

The author describes a very interesting case of pulsating exophthalmus and gives a valuable contribution to the differential diagnosis of this condition and its possible causes. He claims that, although the pulsations are synchronous with the arterial beat, this does not influence the exophthalmus. The passive congestion caused by the obstruction of the return flow, the special anatomical conformation, and the circulatory relations of the orbit to the neighboring parts could explain the phenomenon. He explains his case as a result of a small aneurism of the internal carotid or of the proximal part of the ophthalmic vein. The spontaneous cure is explained by a process of absorption of the venous blood through the collateral routes, as was already noticed and reported by Sattler, De Vincentiis, and Secondi and Bossalino. The article contains many references and a rich bibliography.

D. Alperin.

Raverdino, E. **Calcification of orbital and endocranial blood vessels in a patient affected by aneurismal exophthalmus which had recovered spontaneously.** Riv. Oto-Neuro-Oft., 1928, v. 5, March-April, p. 155.

A patient fifty years of age, as a result of a blow on the right orbitotemporal region in 1906, noticed a protrusion and rhythmic movement of the right eyeball. Six months after the accident the pulsation disappeared. The visual power of the eye remained normal, but the degree of the exophthalmus was unchanged. Twenty years later the patient sustained in the same orbitotemporal region another accident which was immediately followed by a retrobulbar pulsation synchronous with pulsation of the radial artery. This new condition lasted about a year.

In his diagnostic considerations the author assumes that the aneurism of the right cavernous sinus was the sole cause of the exophthalmus. This diagnosis was corroborated by two radiograms, the second of which, taken seven months later, showed even more clearly than the first the evidences of the calcification of the aneurism walls. The radiogram of the right orbital cavity also showed a tortuous linear shadow two mm. wide and three cm. long. This shadow was interpreted as due to a calcified blood vessel.

In order to explain the disappearance of the pulsation, the author assumes that spontaneous recovery of the aneurism took place, due to partial or total thrombosis of its contents, while the calcification of its walls favored formation of the thrombus. The second accident was followed by a second temporary formation of the aneurism and temporary reappearance of the pulsation. In his conclusions the author emphasizes the importance of radiography in patients affected by exophthalmus. In this case radiography enabled him to locate the origin and explain the symptoms of the eye trouble.

M. Lombardo.

Wilde, A. G. **Plastic surgery of the orbit.** Texas State Jour. of Med., 1928, v. 24, Sept., p. 336.

Wilde sounds a warning against undertaking plastic surgery in any case unless a corrective operation is clearly indicated and a favorable outcome may be reasonably anticipated. Major surgery for the correction of minor blemishes is deprecated. Wilde points out that plastic surgery cases rank with fracture cases in predilection to damage suits. The operator should fortify himself with accurately written records, and a complete series of drawings, photographs, and plaster casts. The plaster cast not only shows the

condition that was actually present, but affords opportunity for any amount of preliminary practice. He substitutes wet chamois for skin in practice surgery. These cases are not emergencies and should be undertaken only after long study. The different stages should not be hurried. (Seven case reports with serial photographs. Discussion.) *R. W. Danielson.*

14. EYELIDS AND LACRIMAL APPARATUS

Antonibon, A. **Modification of the follicles of cilia after electrolysis.** Ann. di Ottal., 1928, v. 56, April, p. 911.

Cilia or dogs were submitted to electrolysis with four and five milliamperes for five to ten seconds, and sections were then made of the lid-border at various periods after the treatment. A coagulation necrosis of the epithelium of the follicle was the immediate result of electrolysis, followed by an inflammation with serous exudation and leucocytic infiltration, lasting about five days. This gave place to a proliferation of connective tissue and cicatrization of the destroyed region, which was complete after twenty to thirty days. Reformation of the lash-follicle was never observed. If the needle did not penetrate the follicle the destruction was often incomplete, portions of the follicular epithelium or even of the lash bulb remaining. (Bibliography.) *S. R. Gifford.*

Armstrong, W. E. N. **Autogenous antivirus for blepharitis.** Lancet, 1928, Sept., 15, p. 580.

A woman with blepharitis, that had resisted treatment for a number of years and was getting worse, showed only staphylococci on repeated bacterial examination of material taken from the inflamed area. Subcutaneous inoculation of stock vaccine failed to produce any improvement. An autogenous vaccine gave no more favorable result. Besredka's antivirus therapy was tried. A stock antivirus failed to ameliorate the condition. The patient had grown skeptical, but was persuaded to have an autogenous antivirus, applied in the form of a lotion to the affected parts. Within twenty-four hours after the first application, improvement became manifest; and persistent treatment led to apparent cure. *Edward Jackson.*

De Vincentiis, J. **A new method of canthoplasty.** Ann. d'Ocul., 1928, v. 165, Aug., pp. 570-574.

For the insufficiently wide palpebral fissure, especially due to trachoma, the author describes and illustrates a new operation. After infiltration anesthesia the lids are separated as far as possible, and with a sharp knife an incision one centimeter long and half way between the skin and conjunctiva is made at the outer canthus. This extends subcutaneously about five millimeters. With scissors a horizontal incision is then made through the skin, one blade of the scissors being in the undermined space. The skin flaps are dissected back. The underlying tissue is then squared with two horizontal cuts about one centimeter apart, and this flap is turned outward and sutured over the raw edges of the skin after this has been trimmed so as to present a smooth contour in line with the lid margins. *L. T. P.*

Fazakas, Alexander. **Atonic epiphora.** Klin. M. f. Augenh., 1928, v. 80, June, p. 788.

Fazakas has elucidated a new type of epiphora from atony of Horner's muscle. Galvanization cured the condition, and this corroborated the opinion that the lacrimal passages play an active rôle in the conduction of tears in which Horner's muscle chiefly participates. *C. Zimmermann.*

Fazakas, Alexander. **On the topography of the lacrimal fossa, with regard to operations on the tear sac.** Klin. M. f. Augenh., 1928, v. 80, June, p. 775. (8 ill.)

In his examination of two hundred skulls, Fazakas found remarkable variation of the topography of the

lacrimal fossa. In twenty per cent there was a second well-formed fossa bordered in front by a second projecting crista, similar to the first, so that the value of the crista for finding the tear sac is greatly reduced. The author recognizes the entrance into the osseous nasolacrimal duct as the correct guide for finding the tear sac.
C. Zimmermann.

Gabriélidés, C. **Amyloid degeneration of the lid.** Ann. d'Ocul., 1928, v. 165, Aug., pp. 575-581.

The author's case was in the left upper lid of a woman thirty-five years old who at the time was eight months pregnant and suffering from albuminuric retinitis. The blood Wassermann was two plus. Pregnancy was terminated and the patient made an uneventful recovery, but the almond sized tumor was unaffected. It was removed by operation and found to be an amyloid degeneration of the connective tissue. There was no attachment to tissue or conjunctiva.
L. T. P.

Ishikawa, F. **Insufficient secretion of tears as congenital anomaly.** Klin. M. f. Augenh., 1928, v. 80, June, p. 792.

The relatives of a boy aged four years observed that from birth his eyes never teared when he cried. As no other cause could be found, the affection was attributed to congenital hypoplasia of the lacrimal glands. The photophobia and frequent winking were apparently secondary to the insufficient tear secretion.
C. Zimmermann.

Szokolik, Eduard. **Hungarian palpebroplasty.** Klin. M. f. Augenh., 1928, v. 80, May, p. 652. (11 ill.)

The method of semicircular flaps is described and illustrated. The results were good. *C. Zimmermann.*

Zborowsky, W. F. **Treatment of spastic entropium by L. Weekers' method.** Klin. M. f. Augenh., 1928, v. 80, May, p. 648.

Injection of 0.4 c.c. of 80 per cent alcohol between tarsus and muscle along two-thirds of the temporal portion of the lid gave excellent results in two cases of senile spastic entropium. *C. Zimmermann.*

15. TUMORS

Aynesworth, Horace T. **Malignancy of the orbit and accessory sinuses.** Texas State Jour. of Med., 1928, v. 24, Sept., p. 354.

Aynesworth gives a gloomy prognosis for cases of malignancy of orbit, throat, accessory sinuses, and nose under any form of treatment. The two tumors briefly (abstract of discussion) mentioned were a carcinoma of the orbit and a carcinoma of the antrum. *R. W. Danielson.*

Barletta, V. **Cavernous angioma of the orbit.** Arch. di Ottal., 1928, v. 56, June, p. 510-518.

A woman of fifty-one years developed below the left eye, during six years, a tumor the size of a small nut. It had caused no proptosis. Two c.c. of blood was withdrawn at exploratory puncture, and the tumor regained its original size after forty-eight hours. It was removed easily and diagnosis of cavernous angioma was confirmed by section.

In the septa between the blood-spaces and in the capsule itself were masses of young mesenchymal cells which showed a tendency to assume endothelial characters, proliferating to form capillary spaces which, when entered by blood, formed larger lacunæ. This was especially noted where such cells were invading the homogeneous fibrinous material which had separated from the red cells in the blood spaces, and the author believes this process of thrombus organization is most important in the pathogenesis of these tumors. (Bibliography and six microphotos.) *S. R. Gifford.*

Battista, L. T. **Cavernous angioma of the orbit.** Ann. di Ottal., 1928, v. 56, Oct., p. 907-910.

A man of twenty years had noted unilateral exophthalmus for four years. This measured eight mm. at the author's first examination. The eye was turned in, vision was eight-tenths, and a mass could be felt up and out. X-ray showed diffuse clouding of the orbit and a puncture revealed blood. An external orbitotomy with removal of two cm. of the external rim of the orbit allowed removal of the tumor, which was inside the muscle core, extending to the apex of the orbit. Sections showed one encapsulated angioma with some lymphoid elements.

The superiority of orbitotomy by Circincione's technique over other methods of approach is emphasized. It allows of bone resection when this is found necessary. (Bibliography.)

S. R. Gifford.

Battista, L. G. **Mixed tumors of the lacrimal gland.** Ann. di Ottal., 1928, v. 56, Sept., pp. 830-835.

A rapidly growing, painless tumor appeared in the orbit of a woman of thirty. It was removed in its capsule by simple orbitotomy and found to be composed principally of myxomatous connective tissue, with cartilage, hyaline deposits, glandular epithelium, and whorls resembling those of an endothelioma included.

S. R. Gifford.

D'Andrade, Lopes. **A case of cavernous hemangioma of the orbit.** Ann. d'Ocul., 1928, v. 165, Aug., pp. 588-592.

An orbital tumor of this type was removed by the author and the diagnosis confirmed in sections. Three illustrations and a short discussion of such tumors accompany the article.

L. T. Post.

Hine, M. L., and Wyatt, R. B. H. **A case of neurofibromatosis of the right orbit.** Brit. Jour. Ophth., 1928, v. 12, Oct., p. 513.

This very rare condition was observed in a man aged twenty-six years. At the age of eight years he had had a small section of an enlargement of the right upper lid removed for diagnostic purposes. The report proved the present diagnosis. At the time of the present observation the right upper lid was enormously thickened and overhanging. There was a small patch of thickened skin in the right temporal and occipital region. There was present considerable conjunctival discharge and a recurrent ulceration of the skin of the lower lid. The upper lid, eyeball and orbital tissues were removed, obliterating the socket.

Pathological examination showed a fibromatosis of the nerve twigs in orbital tissue, of the ciliary nerves outside the dural sheath of the optic nerve, and of the skin of the upper lid. Chorioretinal and corneal changes were observed. (Four microphotographs and one illustration.) *D. F. Harbridge.*

Klein, Nikolaus. **Ring sarcoma of iris and ciliary body.** Klin. M. f. Augenh., 1928, v. 80, May, p. 631. (8 ill.)

A laborer, aged fifty-two years, complained of pain in his right eye for a year, and it had been intense for the last two weeks. The cornea was degenerated and the eye blind. The eye was enucleated on account of absolute glaucoma. The anatomical examination, which is given in detail, revealed a spindle-cell ring sarcoma of the ciliary body and iris. The sclerocorneal network and the canal of Schlemm were occupied by a circular peripheral synechia which explained the impossibility of outflow from the angle of the anterior chamber. The difficulty of correct diagnosis is emphasized.

C. Zimmermann.

Santonastoso, A. **Rare epibulbar tumors.** Arch. di Ottal., 1928, v. 36, June, p. 535-548.

Three cases are reported. The first tumor was a fleshy nodule at the limbus of a youth of sixteen years. Sec-

tions showed it to be a giant-celled leucosarcoma. It was removed easily and no recurrence was seen. The second patient was a man of fifty-one years, showing a large polypoid mass involving the bulbar conjunctiva and lower fold, and one lobule of which was darkly pigmented. This was removed, and the large defect covered with conjunctival flaps. There was no recurrence three months later. The tumor had been first noted following an injury fifteen years before and had increased rapidly in size following a second recent injury. Sections showed a vascular spindle-celled sarcoma containing both blood pigment and melanin.

The third case showed a nodule of the bulbar conjunctiva, pale pink and movable with the conjunctiva, eight by five mm. in extent. It recurred a year after removal, and a year after the second excision there had been no further recurrence. The tumor consisted of hyaline connective tissue enclosing numerous endothelial-lined lymph spaces. Such lymphangiomata of the conjunctiva are very rare in the literature. (Bibliography and eight illustrations.) *S. R. Gifford.*

Scalzitti. **Spindle-celled melanosarcoma of the palpebral conjunctiva and caruncle.** Ann. di Ottal., 1928, v. 56, May, p. 423-429.

Three cases are reported, in two of which the tumor arose from the region of the caruncle, and in the third from the conjunctiva of the lower lid. All were composed of spindle cells, and contained pigment. Excision, followed by x-ray exposures in two cases, was the treatment. In two cases, the cervical glands were already involved. (Bibliography.) *S. R. Gifford.*

Schwartz, Z. **Squamous-celled carcinoma of the limbus extending over the cornea.** Med. Jour. Australia, supplement, 1927, v. 2, Dec., p. 463.

The chief points of interest in this case are: (1) extension of the fleshy growth across the cornea from limbus to limbus, the cornea above and below being clear, and the conjunctiva apparently free; (2) that although the tumor had been present for two years the substantia propria was not invaded. (Discussion and references.)

George H. Stine.

Teulières, M. **Two cases of glioma of the retina.** Arch. d'Opht., 1928, v. 45, Aug., p. 496.

Reports of two original observations upon children with almost identical histories and clinical findings of intraocular tumor are given. Each child showed the yellow reflex from one eye. In both cases enucleation was done. In the first, a typical glioma or retinocytoma was found, but in the second the histological examination showed a complex tumor containing nerve cells, glia, and pigmented tissue, with blood elements. A tentative diagnosis of teratoma was made. It was too early to predict the final outcome as to recurrence. *M. F. Weymann.*

Veil, Prosper. **Anatomical-clinical study of a case of nevocancer of the limbus and its metastases: prognosis and treatment of nevocarcinoma of the bulbar conjunctiva and limbus.** Arch. d'Opht., 1928, v. 45, Aug., p. 506.

After a review of the literature upon this subject, the case of a patient seventy-three years of age, with a melanotic tumor of the limbus in the right eye, is given. The patient was first seen in October, 1924, and biopsy gave the diagnosis of nevocancer. Radium treatment was used, but the tumor was larger in February, 1925. At this time it was removed surgically and cauterized at its base. In April the tumor was gone, but nevocarcinoma metastases were found in the preauricular gland. Radium was used but further metastases in other glands appeared and in June, 1927, the patient died of general metastases without having had a local recurrence. The pathological exami-

nation showed typical nevocarcinoma. Two other cases are described in which nevocarcinomata were removed from the limbus and conjunctiva in an early stage without recurrence or metastases. The writer thinks enucleation unnecessary unless there is penetration with invasion of the orbit. *M. F. Weymann.*

Wätzold, and Gyotoku, Katsuto. **The pathogenesis of choroidal sarcoma.** Graefe's Arch., 1928, v. 120, p. 209.

There are two ways in which choroidal sarcoma spreads and leads to the formation of metastases. One frequently evident in the base of the growth is a breaking of the sarcoma cells into the blood and lymph vessels within the tumor. The other method, still more frequently manifest, is early extension of the tumor cells along the lymph spaces of the ciliary vessels and nerves posteriorly through the sclera. Immediate exenteration of the orbit should be done whenever the diagnosis of choroidal sarcoma is fairly certain. The conservative and less disfiguring enucleation of the eyeball cannot insure the same result because of the danger of recurrences or metastases from tumor cells in the lymph vessels and lymph glands of the orbital tissue. *H. D. Lamb.*

16. INJURIES

Bab, Werner. **Lesions of the eye from cosmetics.** Klin. M. f. Augenh., 1928, v. 80, May, p. 665.

The author observed conjunctivitis and blepharitis from face powder and hair dye, e.g., henna black used on the eyebrows and lashes in some cases caused very minute corneal erosions.

C. Zimmermann.

Clark, N. T. **A case of anthrax of the eyeball.** Internat. Jour. of Med. and Surg., 1928, v. 41, Sept., p. 436.

A boy of fourteen years suffered a perforation of the cornea from a flying piece of rock while hoeing in a cotton field. On the third day the eye was inflamed, the cornea yellow, the iris greenish. There was no pain or suppuration but constitutional symptoms were present. The eye was removed and the adjacent structures treated with iodine and mercury bichloride. The bacteriologist's report was positive for anthrax. Culture from a dirty cheap grade of wool in the boy's baseball mitt, was also positive. The boy recovered. No mention is made of the use of serum.

R. W. Danielson.

Coppez, H. **Ocular chalcosis.** Arch. d' Opht., 1928, v. 45, Oct., p. 609.

Three cases in which an eye had been enucleated because of the presence of an intraocular particle of copper were described. In one individual the copper was present for twenty-four years before enucleation was necessary. Areas of pigmentary degeneration in the choroid with blue-white exudate were seen in this eye. Descriptions of histological examinations are included. *M. F. Weymann.*

Eagleton, Wells P. **Traumatic lesions of the head and their relation to the ophthalmologist.** Jour. of Med. Soc. of New Jersey, 1928, v. 25, Sept., p. 567.

It is suggested that a department of cranial surgery should be established in every general hospital, ophthalmologists to be an integral part of the personnel. A technician trained in special eye and ear examinations should be attached to the department. The diagnosis and treatment of traumatic lesions of the head are lucidly discussed under six classifications. Typical case reports and usual ophthalmological findings in each class are given.

R. W. Danielson.

Hessberg, R. **Occupational changes and diseases of the eye.** Zent. f. d. ges. Ophth. u. i. Grenz., 1928, v. 20, Aug. 7, p. 89.

Hessberg discusses the effect of

poor ventilation, light, heat, x-ray, radium, electric energy, cold, and dust upon the eye and its adnexa. The possibility of waterborn infection of the conjunctiva must be considered in swimming pool attendants. In addition, the possibility of an epidemic conjunctivitis in an establishment where one of the employees has trachoma must also be considered in this light. Animal and plant poisons are also discussed, including the reaction from bees, hornets, and ants, as well as caterpillar hairs in the conjunctival sac. Among the plant poisons the effect of tobacco dust in tobacco workers is brought out. A section is devoted to changes brought about by gases, alkalies, metals, acids, and alcohol. The inorganic and organic chemical changes are discussed. The paper is an excellent résumé of the subject, that cannot be abstracted.

Frederick C. Cordes.

Idhikama, Fukumi. **Experimental observations on the occurrence of traumatic mydriasis.** Graefe's Arch., 1928, v. 120, p. 317.

In rabbit eyes, a blunt blow of appropriate force produces normally a transient miosis but never a lasting mydriasis. The latter can occur only when the sphincter pupillæ muscle has previously been put into a strongly contracted state through the use of eserin. The pathologically dilated pupil whose clinical appearance corresponds almost completely to traumatic mydriasis in man reacts to different drugs affecting the pupil, especially eserin and atropin, in a slight degree if at all; to an equally slight degree is it affected by the action of light.

In traumatic mydriasis no postmortem miosis occurs. After fixation of the eyeball the pupil is dilated just as much as before enucleation. Therefore it is probable that the occurrence of such mydriasis in rabbits as well as in man is to be assigned essentially to a direct injury of the sphincter. This assumption the author can further confirm by pathological anatomical examination, since the sphincter muscle shows definite changes immediately after the blow. These changes are degenerations produced by crushing of the muscle fibers.

H. D. Lamb.

Kaul, S. N. **Extraction of thorn from the orbital cavity.** Brit. Jour. Ophth., 1928, v. 12, Oct., p. 521.

A man aged thirty-five years carried for four months a thorn one and a quarter inches in length, which had entered his eye behind the upper lid. He had no pain and only came for treatment because of a recent chemosis. There was slight edema of the lid, slight proptosis, a pin-point pupil, and deep anterior chamber. There was no tenderness, no view of the fundus was obtained. Upon everting the lid a dark mass in the fornix indicated the point at which removal of the thorn was successfully performed.

D. F. Harbridge.

Lanari, E. L. **Radiological investigation of foreign bodies within the orbit.** Semana Med., 1928, no. 32, p. 322.

One of the aids in localizing an intraorbital body is that devised by Beclere, consisting in the application of a small metallic ring around the limbus, which serves as a guide to localize the body either within or without the globe. The cornea is anesthetized, and the ring placed around the cornea under the lids. Stereoscopic views show accurately the position of the opaque substance. The second method advocated consists in rapid double radiography of the globe on the same plate, the eye being moved between exposures.

A. G. Wilde.

Lembeck, Günther. **Experiences with roentgen localization according to Comberg.** Klin. M. f., Augenh., 1928, v. 80, June, p. 767. (6 ill.)

Lembeck reports on Comberg's method (at first described in Graefe's Archiv, v. 119, p. 175), which, within the last few years, has been applied at the eye clinic of the University of Berlin to all cases of intraocular foreign body, whose seat could not at once be ascertained, and in which the giant magnet did not give immediate results. The directions are again given, and the cases reported in tabular form. The author concludes that Comberg's procedure is the first mathematically exact method, which, with very simple apparatus, indicates the meridian and the distance of the place of incision from the limbus.

C. Zimmermann.

Satanowsky, Paulina. **Ocular phototraumatism due to ultraviolet rays.** Semana Med., 1928, no. 31, p. 278.

On account of the increasing use of lamps rich in ultraviolet, cases of eye injury due to their influence are occurring more frequently. These are seen clinically in two forms; (1) The simpler type is characterized by slight pain, lacrimation, blepharospasm, and edema of the cornea, all of which disappear after one or two days of freedom from the irritating ray.

(2) The severe type in which there is a great aggravation of all the above symptoms, especially the pain and photophobia, along with edema of the lids and chemosis of the conjunctiva. This lasts usually four or five days.

Two cases are reported, one from each of the above groups. The treatment employed was a simple ointment and bandage the first day, and, for the remaining week, use of the darker Fieuzal glasses.

In the more severe cases the edema of the cornea may go on to vesiculation, the epithelium being raised by the subjacent fluid. After four days these rupture spontaneously, leaving small superficial ulcerations, without an infiltrate.

There is undoubtedly a personal factor as to susceptibility to these rays, for in a group exposed to identical conditions, some will not be influenced, while others show effects from the lightest to the most aggravated forms.

For prophylaxis the authoress advocates the use of the darker shades of Fieuzal (no. 6 or 7), at times supplemented with a red glass which serves to eliminate completely the ultraviolet components. *A. G. Wilde.*

Siegfried, W. **Experimental observations on the alleged injurious influence of ultraviolet rays.** Graefe's Arch., 1928, v. 120, p. 538.

Experimental observations of the author confirmed the experimental findings of Vogt fifteen years ago that the ultraviolet rays of daylight even in high concentration were harmless. The ultraviolet rays therefore have nothing to do with producing erythropsia in the aphakic or in affecting adaptation of the eye. *H. D. Lamb.*

Terrien, F., and Cousin, G. **Perforating wounds of the globe.** Arch. d'Opht., 1928, v. 45, Aug., p. 481.

Observations upon twenty-one patients with perforating wounds of the globe are published. These are treated in three ways. First, with corneal suture; second, by covering the wound with a conjunctival flap; and, third, by a combination of corneal suture and conjunctival flap. It was found that the best results were obtained by the combined method and the poorest way by the conjunctival flap alone. It is recommended that small wounds be covered with a conjunctival flap, that a subconjunctival injection of mercury cyanide be given, and that large wounds be first sutured and then covered with a flap.

M. F. Weymann.

Thies, O. **Transplantation of the oral mucous membrane in severe burns of the eye.** Graefe's Arch., 1928, v. 120, p. 689.

In severe burns from ammonia, acid, and lime, the author recommends graft-

ing within the first week from the mucous membrane of the lips. In deep burns with caustic alkalies, early transplantation of mucous membrane may lead to shrinking and expulsion of the grafts. *H. D. Lamb.*

17. SYSTEMIC DISEASES, INCLUDING PARASITES

Blatt, Nikolaus. **Hereditary ocular lues in the third generation.** Graefe's Arch., 1928, v. 120, p. 635.

The author cites briefly the findings in five grandchildren of a man with acquired syphilis. All these members of the third generation were offsprings of two luetic daughters of the original man with acquired syphilis. The husbands of these daughters were free from syphilis. In three of the five grandchildren, the Wassermann blood test was plus four, in the two remaining individuals it was negative. In two patients syphilitic skin eruptions had been present in the early years, and in two convulsions. In three the head was squared and rhagades were present in two of the patients. In one there were signs of an old parenchymatous keratitis, four showed high hypermetropia, two patients showed typical pepper and salt fundus changes, and two others discrete chorioretinal areas. In the one there was secondary optic atrophy, scrofulous lymphadenitis, and catarrh of the apex of the lung.

From his own cases and those in the literature the author thinks the syphilitic signs in the third generation usually occur late, at the time of puberty. In one patient belonging to the third generation he has observed three attacks of parenchymatous keratitis at seven, seventeen, and twenty-four years of age, and in another two attacks at seventeen and twenty-eight years. *H. D. Lamb.*

Caccialupi, P. **The endocranial sympathetic system, the sphenopalatine gangion, and their nasal and ocular relations.** Riv. Oto-Neuro-Oft., 1928, v. 5, March-April, p. 172.

The author gives a complete description of the anatomy and physiology of the sympathetic nervous system and of Meckel's or the sphenopalatine gangion, stating among other facts, that the optic, Meckel's with its nasal and orbital branches, the ophthalmic, and the submaxillary ganglions, which are usually described in connection with the trigeminal nerve, really form an integral part of the endocranial sympathetic system.

Of interest from the ocular standpoint is the fact that some pathologic conditions of the eye are improved by nasal therapy. The author quotes Worms, who in 1925 stated that some headaches and other ocular disorders were not a result of sinusitis but of a disturbance of the trigeminal-sympathetic system under the influence of superficial irritation of the nasal mucous membrane. The nasal examination, in these cases, reveals a deviated septum or a voluminous middle turbinate. It has been noted that these ocular disturbances sometimes disappear upon mere adrenalization or cocaine-adrenalization of the middle meatus, a region rich in nerve elements, or after resection of the middle turbinate. Dilatation of the pupils in some diseases of the rhinopharingeal region is a true sign of the sympathetic origin of these affections. By treatment of sphenopalatine sensibility the following conditions have been relieved: some defects of refraction, and accommodative asthenopia, lacrimation, some forms of conjunctivitis, retrobulbar neuritis, and glaucoma.

M. Lombardo

Gunn, Milus L. **The relation of eye diseases to diseases of the nasal accessory sinuses.** Kentucky Med. Jour., 1928, v. 26, Aug., p. 406.

Gunn advises examining the nasal accessory sinuses whenever one finds monocular exophthalmos, monocular rapid loss of vision, monocular choked disc, monocular edema of the lids associated with very severe headaches, central scotoma, enlargement of the blind spot, asthenopic symptoms if the eye

conditions are not found responsible. Discussion of each heading is given and four case reports are included.

R. W. Danielson.

Horniker. **A new view of the pathogenesis of some degenerative ocular changes.** Arch. di Ottal., 1928, v. 56, June, pp. 549-553. (See this Journal, v. 11, Sept., p. 762.)

Mayerhofer, Heinrich. **Three rare cases of tuberculosis of the choroid and retina.** Wien. klin. Woch., 1927, v. 40, Sept., p. 1199.

Three cases of ocular tuberculosis are reported. One patient had active lung findings in contrast to the usual insignificant pulmonary findings, and in this case, after a few minimum doses of old tuberculin, the patient had temperature and hemoptysis from which he recovered. The author emphasizes the need of care in using tuberculin as a therapeutic agent.

Beulah Cushman.

Scalzitti, G. **Specific therapy in luetic ocular diseases.** The importance of the spinal fluid Wassermann. Arch. di Ottal., 1928, v. 56, June, pp. 481-503.

In tertiary and hereditary syphilis, where the blood Wassermann may be negative, the spinal fluid Wassermann is nearly always positive. In early neurosyphilis the spinal fluid Wassermann may be negative, but usually an increased cell count or increase of globulin will indicate the presence of inflammation. While results with salvarsan are often brilliant in optic neuritis, opinions differ as to whether it should be used in optic atrophy. Experiences of others with bismuth therapy are quoted, and fourteen cases are described, chiefly of interstitial keratitis and ophthalmoplegia, which the author treated with bismuth. The lesions of interstitial keratitis cleared up rapidly, but the blood Wassermann remained positive. Bismuth was inferior to combined mercury-arsphenamine treatment in the ophthalmoplegic cases. The author concludes from this experience that combined mercury-arsephenamine treatment is to be preferred to bismuth. Bismuth is of value, however, in certain cases in which the other drugs cannot be used. (Bibliography.)

S. R. Gifford.

Sobhy, M. **Bilharziasis of the conjunctiva.** Jour. Egypt. Med. Assoc., 1928, v. 11, Jan., p. 12. Ann. d'Ocul., 1928, v. 165, Sept., pp. 641-667.

The author believes this to be the first case recorded in the literature. Four plates showing the clinical and microscopical appearance are given. When first seen the lesion appeared to be an abscess of the upper lid. A history of gradual growth over a period of twenty days without symptoms of bilharziasis of the urinary tract was elicited. Exploratory incision revealed no pus, so the mass was excised via the skin route. The tarsus was infiltrated and difficulty in removing the tumor in one piece was encountered. Microscopic examination showed many ova of the terminal-spined Shistosoma hæmatobium in granulation tissue. The urine revealed living ova. Postoperative inspection showed the upper bulbar conjunctiva intensely injected, swollen, and with several yellowish points resembling miliary tubercle. The fornix was obliterated. There were also a few corneal infiltrates up and out similar to the marginal ulcers of conjunctivitis.

After local treatment with hot fomentations and permanganate lotion, and intravenous injections of tartar emetic over a period of three weeks, corneal infiltration had disappeared. The growth in the upper fornix had diminished but had spread laterally to encroach on the limbus. There it formed an elevated crescent composed of yellowish white nodules about the size of a pin-head and scattered irregularly.

From the extent of the lesion and the number of ova, it is concluded that the worm had found its way to the orbital

veins or their tributaries, where it had settled and deposited its eggs.

George H. Stine.

Thomson, E. S. **Ocular involvement in sinus disease.** Larynoscope, 1928, pp. 439-468.

Optic nerve diseases are well recognized, but uveal diseases caused by sinus affections and toxemia are somewhat in doubt. Thomson reviews, in abstract, twenty-six of the more important earlier papers on this subject; and deduces from them characteristics of the clinical pictures of eye diseases of such origin. He gives in brief outline histories of forty-four cases, seen mostly in private practice.

The author's conclusions are: Sinus diseases cause iritis, cyclitis, retinitis, and choroiditis in almost as great frequency as they cause optic neuritis. The diagnosis of the causal relationship is, in many cases, so difficult for the rhinologist, that it must remain for the ophthalmologist to decide when the sinus operation should be done. Time is of the greatest importance, as destructive changes in the ocular tissues often take place with great rapidity. Certain clinical pictures in the eye are almost diagnostic of sinus disease, and others are so suggestive that, taken in connection with the absence of other causes, a diagnosis of strong probability can usually be made.

The dangers of a correctly done sinus operation are not sufficient to justify a temporizing course, where the integrity of the eye is endangered. To secure the best results, the closest cooperation is essential between the ophthalmologist and the rhinologist of proved technical ability. In the vast majority of cases, if treatment can be promptly instituted, the results of operation are excellent—in many cases remarkable. Even in late cases, where a reasonably positive diagnosis can be made, operation should be done, as the results are often surprisingly good.

Edward Jackson.

18. HYGIENE, SOCIOLOGY, EDUCATION, AND HISTORY

Buck, Robert H. **The position of the ophthalmologist in the medical profession.** Illinois Med. Jour., 1928, v. 53, Feb., p. 136.

There is a notable lack of intimate relationship between ophthalmologists and their fellows in general practice. No refraction is complete without thorough examination of the eyes, and the trained ophthalmologist is the only man competent and qualified to do it. The keynote for correction of this condition is a campaign of education within the medical profession and, through the physician, education of the public by dissemination of a knowledge of the requirements of a proper examination of the eyes. (Discussion.) *George H. Stine.*

Jeandelize. **The visual fitness necessary for automobile drivers.** Arch. d'Ophth., 1928, v. 45, Oct., p. 643.

This article is a review of the opinions of the proponents of a physical examination for drivers of automobiles in France and other European countries. The various opinions as to visual requirements are given in detail and the steps to be taken to legalize these requirements are discussed.

M. F. Weymann.

Kusama, Hiroshi. **The prevalence of trachoma and its preventive measures in Japan.** Japan Med. World, 1928, v. 8, June, p. 154; and July, p. 176.

This is a long, statistical, well organized survey of the subject prepared for the health section of the League of Nations. It is shown that trachoma is on the decrease. The percentage of pupils affected in primary schools is about fourteen per cent, and in universities and colleges less than one per cent. Trachoma is second only to gonorrhea as a cause of blindness. (Bibliography.) *R. W. Danielson.*

Lamb, H. D. **Hereditary blindness in Missouri.** Jour. Missouri State Med. Assoc., 1928, v. 25, March, p. 97.

The author analyses the causes of hereditary blindness in children, the amounts of vision, consanguinity and blindness in parents, and a study among adults. These data are presented in six tables, supplemented with two tables by N. Bishop Harman of London and H. Frese of Steglitz-Berlin. A plea for more accurate figures on the amount of hereditary blindness in the United States is made. *George H. Stine.*

Lewis, F. P. **A decimal percentage scale for visual losses.** Med. Jour. and Record, 1928, June 6, p. 581.

No question as to workmen's compensation has occasioned more difficulties than the relative percentage of visual loss after eye injuries. Visual loss is not a reciprocal nor a mathematic deduction of visual acuity. The courts ask the expert what percentage of vision has been lost and what remains. When one eye specialist assures the court a certain visual acuity loss means a loss of 50 per cent and another that it means a loss of 16.7 per cent, the confusion and uncertainty are not diminished.

The visual acuity recorded generally means that of a part of the visual field within 2.5 degrees of the point of fixation. And, although the acuity normally falls away rapidly beyond this, vision in the peripheral field is important for many things. Normal vision is binocular, and disturbance of the relations of the two eyes may be as bad as total loss of one eye. The fractional expression of vision derived from the Snellen test chart is exceedingly awkward. Lewis proposes that instead of such fractions the angle subtended by the letters be stated. Thus 20/20 would mean a five minute angle; 20/200 a fifty minute angle; etc. A fair way of estimating central and peripheral vision would be by circles concentric with the point of fixation, one having a diameter of ten degrees around that point, another thirty degrees outside of that. Invasion of the first circle would mean a loss of 50 per cent of vision, invasion of the larger circle a loss of 25 per cent. The amount of disability due to loss of binocular vision must be largely determined by the disability which the particular accident occasions.

Any percentage scale must have a starting point and a point at which it is complete. Lewis endorses the plan that for letters seen at a five minute angle the loss shall be zero, that at a fifty-five minute angle the loss shall be complete, and that vision 20/220 shall be economic blindness. Letters vary in visibility. For showing the visual acuity the same symbol should be used throughout. The letter E mounted on a pivot so that it can be turned to either of four directions is suggested. It is also suggested that state legislation should furnish such tests, fixing the illumination to be used and the significance of each test. This would greatly facilitate the work of the medical examiner and of the courts. *Edward Jackson.*

Ocular balance in flying men. Lancet, July 21, 1928, v. 2, p. 131.

The Manual for Medical Officers of the Royal Air Force is drawn on in the Lancet annotations. In examining pilots, consideration was first given to visual acuity, but it was found that a large percentage of those who could not land had defective visual judgment, and tests to expose muscle imbalance were added. These were the convergence test, cover test, red-green phorometer test, and Harman diaphragm test. Subjects with muscle imbalance take a time considerably over the normal before they learn to land. Those with exophoria "flatten" their machines too early, those with esophoria too late. That such defective visual judgment is actually the cause of many landing troubles has been proved by the effects of visual training. Such training carried out by means of Worth's amblyoscope alone, or combined with the stereoscope as de-

manded by the type of case, has proved of great value.

The most simple cases are those of pure exophoria, whether found in pilots (a) who, on entry, had a tendency not sufficient to exclude them; or (b) who have suffered some such illness as influenza, malaria, or sand fly fever, or have become gradually debilitated from tropical service; or (c) who suffered from cerebral concussion after some accident. Some of the last show a remarkable power of recovery with time, but (a) and (b) require training. Less simple are the esophorias, whether having a basis of hyperphoria, or of spasmodic character, produced sometimes by "sun glare" or by irregular nerve impulses to master mild exophoria. In an interesting type the "neglect" or suppression factor is predominant. In "alternating neglect," one eye functions for a time and then gives way entirely to the other. The pilot then tends to fly his machine after the zig-zag fashion of the snipe. In training these cases the neglect factor must first be dealt with. A few pilots are found to have only one useful eye and to have acquired the monocular sense of perspective.

Edward Jackson.

Ovio, G. **Formulæ and tables of industrial disability from ocular injuries.** Ann. di Ottal., 1928, v. 56, Oct., pp. 865-886.

A system of calculating the visual disability in degrees is described, taking into account the previous vision and the involvement of one or both eyes. Reduction of vision to 7/10 is the smallest amount of disability considered, and vision of one-twentieth is considered total industrial blindness. Only the central vision is considered, disturbances of the visual fields and ocular movements being left out of account. *S. R. Gifford.*

Weekers, L. **Visual aptitude of automobile drivers.** Bull. Soc. Belge d'Opht., 1928, 56, May 6, p. 15. **Consideration of the physical fitness of automobile drivers.** Arch., d'Opht., 1928, v. 45, Oct., p. 636.

This communication deserves greater space and more general consideration than the average abstract because it treats of an evil which is acute and fearfully destructive of life and property in all parts of the civilized world, but especially so in the United States of America.

The author communicates to the Ophthalmological Society of Belgium the text of the report made by him to the Royal Academy of Medicine of Brussels. In 1925 a royal decree was prepared which required a medical certificate from any one seeking to obtain a permit to drive an automobile. This was not promulgated owing to the opposition of the medical profession, which considered the measure practically inoperable for the following reasons: (1) the difficulty of discovering certain defects, such as epilepsy; (2) that the examination would have to be complete, requiring several specialists; (3) that the candidate would have to be kept under observation; (4) that when refused by one physician the candidate might secure a permit through some less conscientious physician.

The author suggests that the automobile driver himself shall be obliged to assume his own responsibilities. Let a list of defects be established that render one unfit to drive an automobile. Legislate to the effect that any one afflicted with these defects who drives an automobile thereby commits a culpable imprudence. If in spite of this knowledge the candidate drives the car and an accident ensues, he will be ipso facto condemned to severe punishment and in addition be held responsible for the damage caused by the accident.

The practical immediate consequences of such legislation would be as follows: It is customary for drivers to insure themselves against collision accidents. In case of promulgation of the above plan the insurance company would be compelled to require medical

examination of candidates for driver's permits just as they do for life insurance. The same result would be gained if the insurance company, instead of holding a preliminary examination, were to put in the contract a clause rendering the contract void in case of accident if the driver implicated was found to have any of the defects codified as rendering him unfit to drive an automobile. The author quotes a letter from his colleague Wille, professor of civil law at the university of Liége, who concludes that the project is entirely practicable and conforms to the principles of law.

Vision is the most important of the senses. Every day experience shows that many unfit drivers are operating cars. Severe visual tests are required of locomotive drivers, motor men, and others. Even more severe tests should be given to the drivers of automobiles, who are constantly exposed to the unforeseen. And yet there is no law that restrains them. The author proposes an address from the Society to the government embodying the above facts. He proposes to name a commission charged with the duty of defining the visual aptitude to be required of automobile drivers.

The writer's suggested visual requirements are, minimum correct vision of four-tenths in one eye and one-tenth in the other, normal fields, and no diplopia or hemeralopia.

In the discussion, Coppez suggested that the physical unfitness of drivers caused but a very small percentage of automobile accidents, most of them being due to the unskillfulness of the driver, imprudence, love of speed, intoxication, or bad condition of the machine. He preferred a commission to gather all pertinent information. The author, in summing up the discussion, believed that many accidents were due to unsuspected physical defects of the drivers. *J. B. Thomas.*
M. F. Weymann.

Wölfflin, E. **The hundredth anniversary of Albrecht von Graefe.** Graefe's Arch., 1928, v. 120, p. 1.

It was largely through the energetic labors of Graefe after the middle of the nineteenth century that ophthalmology was elevated to a place of equality with the other branches of medicine. Many details of Graefe's life are reviewed, including his studies in Prague and Paris; and his annual summer "vacations" between 1862 and 1869 at Heiden on Lake Constance, where from all over Europe came at first chiefly cases for consultation but soon operative cases also in great number.

At his last visit to Heiden in 1869, when still weak from a relapse of his lung trouble, he was urged to take more rest, but answered: "Arbeit allein macht das Leben glücklich" (Work alone makes life worth while).

(See also editorial, American Journal of Ophthalmology, this volume, May, page 397.) *H. D. Lamb.*

NEWS ITEMS

News items in this issue were received from Drs. E. M. Blake, New Haven; H. Alexander Brown, San Francisco; F. E. Burch, Saint Paul; C. A. Clapp, Baltimore; M. H. Clark, Kansas City, Missouri; George H. Kress, Los Angeles; M. Paul Motto, Cleveland; James M. Patton, Omaha; G. Oram Ring, Philadelphia; and Fred Tooke, Montreal. News items should reach **Dr. Melville Black,** Metropolitan building, Denver, by the twelfth of the month.

Deaths

Dr. Lucien Howe, formerly of Buffalo, died at his home in Boston on December 27, 1928, after a short illness.

Dr. George A. Shepard, New York, aged sixty years, died September twenty-eighth, of pneumonia.

Dr. Martin Rindlaub, Jr., aged fifty-four years, of Fargo, North Dakota, died on December second, in Minneapolis, of general septicemia. Dr. Rindlaub was a graduate of Johns Hopkins in 1905 and had practiced in Fargo since 1905.

Dr. Willard Pineo of Minneapolis died on

November third, of pneumonia complicating tuberculosis. He was born in Columbia, Maine, April 22, 1856, locating in Minneapolis in 1885 after graduating from the University of Minnesota medical school.

Recently the death was recorded of Sir Hugh Anderson, Master of Gonville and Caius College, Cambridge, England, who is said to have been the first to demonstrate beyond dispute, by physiological means, the existence of a dilatator iridis.

Miscellaneous

Dr. Thier of Aix-la-Chapelle recently gave the Graefe museum (1) a patient's history dated 1863, partly dictated, partly written by Graefe himself, and characteristic for the care and precision of its notes, and particularly its methodical visual field measurements; and (2) Graefe's correspondence with a family of Aix-la-Chapelle. Dr. Cramer of Cottbus presented an original letter of Graefe as to a case of bilateral intraocular tumor: in this letter Graefe's tactful and sympathetic attitude as a consultant is manifest.

In Scotland the memory of one of the fathers of British ophthalmology (says the British Journal of Ophthalmology) was recently honored by the establishment of a William Mackenzie memorial fund, one of the purposes of which is the recognition and encouragement of original work in our specialty. The committee of the fund includes representatives of the Eye Infirmary, The Royal Faculty of Physicians and Surgeons, and the University of Glasgow, with all of which institutions Mackenzie was associated during his professional life in Glasgow. The first award of a medal under the fund was made to Dr. A. Maitland Ramsey, formerly of Glasgow, who delivered on this occasion an address on the "importance of general methods in the treatment of eye diseases."

A short history of medicine, by Dr. Charles Singer, has just been published by the Oxford University Press, New York. It is a survey of medical progress from the days of Hippocrates down to the present, and is written for the general reader as well as for the medical student. Dr. Singer is a fellow of the Royal College of Physicians of London and lecturer on the history of medicine in the University of London.

Some fake eye surgeons have been operating in Michigan. One favorite trick is to drop into the eye some coagulable solution and, after it has set, remove it with forceps, and show it to the patient as the cataract that has been destroying the sight.

An Associated Press report from Louisville, Kentucky, under date of November twenty-fourth, says: "More than a year ago Frank Emery, forty-six years old, local Big Four railroad chief clerk, walked into a basement door, ramming a pipe he was smoking down his throat. Saturday he died of trachoma, said by doctors to have resulted from the accident." This well illustrates the reliability of newspaper reports of medical subjects.

Personals

Dr. John H. Rindlaub of Fargo, North Dakota, announces the removal of his office to Pasadena, California.

Dr. Eugene M. Blake of New Haven, Connecticut, has been elected a member of the New York Ophthalmological Society.

Dr. Joseph Kimberlin of Kansas City, Missouri, is spending the winter in Miami, Florida.

Dr. and Mrs. Martin B. Rund of Grand Forks, North Dakota, returned October first from a visit to the Scandinavian and German eye clinics.

Dr. W. H. Howard of Minneapolis, formerly of the Nicollet clinic, has opened an office in the Physicians and Surgeons building, Minneapolis.

Dr. R. G. Campbell of New Castle, Pennsylvania, was recently appointed first resident ophthalmologist to the Lakeside hospital, Cleveland, Ohio.

Dr. Theodore L. Terry has been appointed assistant in ophthalmology in the Harvard medical school.

Dr. David D. Stonecypher, Nebraska City, has been appointed physician at the Nebraska school for the blind.

Dr. Dewey Katz has been appointed instructor in ophthalmology in the medical department of the university of Chicago.

Dr. William M. Bane, of Denver, has been appointed to an instructorship in ophthalmology in the medical department of the university of Colorado.

Dr. Chick McAllister was recently married, and is spending a few months in Skikarpur, India, where he is doing some operative work in Dr. H. D. Holland's clinic.

Dr. W. C. McMurtry has located in San Francisco.

Dr. H. Alexander Brown, of San Francisco, left for Europe on December fifteenth, to be gone several months.

Dr. A. L. MacLean presented a case of congenital bilateral anophthalmos before the Johns Hopkins medical society December tenth.

Dr. O. T. Batcheller of Spokane, Washington, has been visiting in Los Angeles and attended Dr. Edward Jackson's lectures there.

Dr. A. Ray Irvine, of Los Angeles, was called to Salt Lake City for several days recently on account of the death of his mother.

Dr. C. G. Nordin of Saint Paul has become associated with Dr. Henry E. Binger of Saint Paul in the practice of ophthalmology.

Dr. L. S. Gaudet of Natchez, Mississippi,

is collecting news items from Mississippi and Louisiana. Please help him in the good work.

Dr. George F. Suker was the honored guest of the Minnesota Academy at its meeting in Saint Paul, December fourteenth. He spoke on "the lesions of the visual pathways".

Dr. T. B. Holloway was recently the guest of Dr. and Mrs. Fred Tooke at their country home at Pointe Claire, Quebec, while he was attending the council meeting of the American Ophthalmological Society in Montreal.

Dr. George E. de Schweinitz recently gave a dinner at his home in honor of Professor George Weill of the University of Strasbourg, and his son Robert Weill of the department of biology of Woods Hole.

Beginning December third, Dr. Edward Jackson of Denver gave a two weeks course of lectures on "physiologic optics" in Los Angeles. Twenty-five physicians enrolled for the course. Dr. Jackson also addressed the regular monthly meeting of the eye and ear section of the Los Angeles County medical society.

Dr. G. E. de Schweinitz read a paper before the Johns Hopkins medical society December tenth, "concerning certain visual field disturbances associated with hysteria, being a retrospect and the present concept".

Dr. Walter Camp of Minneapolis has started a course in histology and pathology of the eye in the laboratory of pathology for ophthalmology and otolaryngology which has been established in the Todd Memorial hospital of the university of Minnesota.

Societies

At the regular meeting of the ophthalmological and otolaryngological section of the Academy of Medicine of Cleveland, Dr. Myron Metzenbaum was elected chairman and Dr. A. D. Reudemann secretary for the year 1929.

The eye, ear, nose, and throat section of the Connecticut state medical society met at the Hotel Mohican, New London, Connecticut, on Thursday November first. A profitable scientific meeting was held and an enjoyable dinner followed. The chairman of the section is Dr. Thomas A. Woodruff of New London.

The Minnesota Academy of Ophthalmology and oto-laryngology met at Rochester, Minnesota, November third, as guests of the Mayo clinic. Sir Charles Ballance of London gave an address upon brain surgery. Drs. Prangen and Sherard discussed methods of determination of and treatment for muscle imbalance.

At a well attended and enthusiastic dinner meeting of the ophthalmological and otolaryngological section of the Academy of Medicine of Cleveland, held at the University club, November twenty-third, Dr. Harry Gradle of Chicago spoke on "some unsolved ophthalmic problems met with in daily practice". Drs. W. E. Bruner and W.E. Shackelton opened the discussion.

The National Society for the Prevention of Blindness held its annual conference November twenty-six to twenty-eight, in New York, in cooperation with the American Association of Industrial Physicians, the American Association of School Physicians, the National Organization for Public Health Nursing, and sight saving class supervisors and teachers.

Dr. Walter F. Hoffman, secretary-treasurer, Seattle, reminds us that the next meeting of the Pacific Coast Oto-ophthalmological Society is to be held in Salt Lake City, Utah, on July 1, 2, and 3, 1929. Dr. Robert R. Hampton of Salt Lake City is president, Dr. Ralph Fenton of Portland first vice-president, and Dr. Eugene R. Lewis of Los Angeles second vice-president of the Pacific Coast society.

At a recent meeting of the council of the Oxford Ophthalmological Congress the following were elected to hold office in 1929: master, Bernard Cridland; deputy master, Philip H. Adams; honorary treasurer, Robert J. Coulter; honorary secretary, C. G. Russ Wood, 12 St. John's Hill, Shrewsbury, England, to whom all communications should be addressed. The dates of the next meeting are July 4, 5, and 6, 1929.

The members of the council of the American Ophthalmological Society were the guests of Dr. W. G. M. Byers during their recent meeting in Montreal.

At the December meeting of the section on ophthalmology of the College of Physicians of Philadelphia the program was furnished by Drs. J. Milton Griscom, C. E. G. Shannon, G. Oram Ring, Edward A. Shumway, Frederick Krauss, and Joseph V. Klauder. Dr. Klauder, who is professor of dermatology in the graduate school of the university of Pennsylvania, gave a paper (by invitation) on interstitial keratitis following trauma to the cornea, with presentation of patient, and on the relation of trauma to syphilis in general".

VISION GROPING ITS WAY

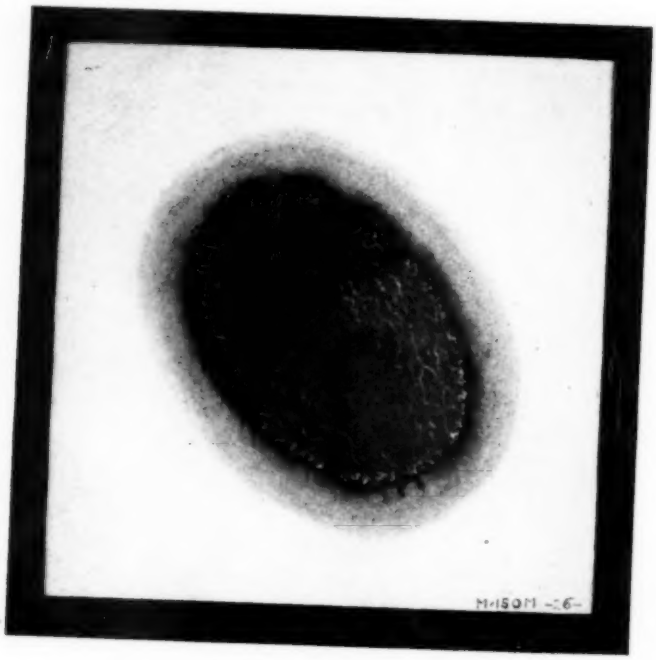
YOUR patient's daily life demands a different sort of eye activity than you observed in your examination room. There you exerted great care that your instruments and test lenses were properly centered and that the consultant directed his vision exactly through the various optical elements.

But away from your office, with your prescription in the form of glasses, before his eyes — what a difference! Do your patients *grope* through certain areas of their lenses; or are you prescribing the highest type of corrected lenses? Perfect refraction, to the very edge, is now obtainable in Bausch and Lomb ORTHOGON Lenses—with the same service as regular toric lenses.

RIGGS OPTICAL COMPANY
QUALITY OPTICAL PRODUCTS

been obvious since the publication of the very excellent stereoscopic photo-

tail necessary to accurate interpreta-



PERSISTENT PUPILLARY MEMBRANE AND CONGENITAL ECTOPIA LENTIS. IN UPPER DRAWING THE PUPIL IS SEEN UNDER MAGNIFICATION. (ALEXANDER R. CREBBIN)